



Walden University
ScholarWorks

Walden Dissertations and Doctoral Studies

Walden Dissertations and Doctoral Studies
Collection

2019

Addressing Human Papillomavirus Vaccination in Primary Care Pediatrics

Natasha Marie Subramaniam
Walden University

Follow this and additional works at: <https://scholarworks.waldenu.edu/dissertations>

 Part of the [Nursing Commons](#)

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact ScholarWorks@waldenu.edu.

Walden University

College of Health Sciences

This is to certify that the doctoral study by

Natasha Subramaniam

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee

Dr. Barbara Barrett, Committee Chairperson, Nursing Faculty

Dr. Eileen Fowles, Committee Member, Nursing Faculty

Dr. Jonas Nguh, University Reviewer, Nursing Faculty

The Office of the Provost

Walden University
2019

Abstract

Addressing Human Papillomavirus Vaccination in Primary Care Pediatrics

by

Natasha Marie Subramaniam

MS, Walden University, 2014

BS, Indiana Wesleyan University, 2011

Project Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Nursing Practice

Walden University

[August] 2019

Abstract

Human papillomavirus (HPV) is the most common sexually transmitted disease in the United States. Despite most common transmission, HPV immunization in adolescents remains below target rates of 80% as outlined by Healthy People 2020 Objectives. Nearly all individuals will contract HPV during their lifetime. The purpose of this project was to educate providers on successfully promoting HPV immunization in adolescents utilizing evidence-based methods. The health belief model (HBM) was the theoretical underpinning utilized to teach providers on discussions about 9vHPV immunization with parents of adolescents. The practice focused question explored whether an education program using concepts from the HBM would increase provider perception of preparedness on recommending Gardasil 9 immunization in adolescents. Convenience sampling was utilized to recruit participants. There were 9 out of 25 providers that attended the educational in service with 8 completing the continuing education evaluation tool. Participants included providers who are affiliated and hold privileges with the health care system. Survey Monkey was used to analyze the participant evaluations. All the participants found the educational information relevant to increasing their perception of preparedness on recommending Gardasil 9 immunization in adolescents. The findings suggest that providers would benefit from training on recommending HPV immunization in adolescents. Continued training would help enhance timely immunization rates that could decrease cancer rates and reduce associated healthcare cost, in turn promoting population health and positive social change.

Addressing Human Papillomavirus Vaccination in Primary Care Pediatrics

by

Natasha Marie Subramaniam

MS, Walden University, 2014

BS, Indiana Wesleyan University, 2011

Project Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Nursing Practice

Walden University

[August] 2019

Dedication

In dedication to my three sons, Tavish, Ranesh, and Gyan, and to my loving husband, Kumar. Each of you has been pivotal in my success as a nurse and scholar. Thank you for always believing in me and inspiring me in all I do! I love you all!

Acknowledgments

I would like to acknowledge the following individuals for their contributions in my education. First and foremost, I thank God for all he has done in my life and blessed me with. Secondly, I thank my family for their endless sacrifices throughout my educational pursuit, each of your sacrifices have not went unnoticed. I love you all so much! A special thanks to, to Dr. Anthony Henry, Dr. Jim Ingram, and Dr. Mark Souder for each of your contributions and advice throughout this journey; Each of you have played a pivotal role in my success. Thank you, Sarah Schultis, RN, Cheryl Jones, RN, Lori Hollenbaugh, RN, and Nicole Smith, LPN for cheering me on throughout all of my educational pursuits and being such dear friends. Thank you to Dr. Barrett for all your help in getting me through this program! We have spent countless hours discussing my capstone and without your dedication to teaching and the nursing profession, I would not be here. A special thanks to Dr. Eileen Fowles, Dr. Nguh, Dr. McGinnis, and the adjunct faculty at Walden University.

Table of Contents

List of Tables	v
List of Figures	vi
Section 1: Nature of the Project	1
Introduction.....	1
Problem Statement.....	5
Purpose.....	6
Addressing the Gap in Practice.....	7
Nature of Doctoral Project.....	8
Significance.....	9
Stakeholders	9
Contribution to Nursing Practice	10
Generalizability.....	11
Implications for Social Change.....	11
Summary.....	12
Section 2: Background and Context	13
Introduction.....	13
Concepts, Models, and Theories.....	15
Theoretical Concepts and Models.....	15
Definition of Key Terms.....	21
Relevance to Nursing Practice	23
Practice Problem.....	25

Practice Recommendations	26
Local Background and Context	29
Institutional Context.....	30
Federal Context.....	31
Role of the DNP Student.....	32
Professional Context	32
Motivation for Project.....	33
Biases	34
Role of the Project Team	34
Summary	36
Section 3: Collection and Analysis of Evidence.....	37
Introduction.....	37
Practice-Focused Question.....	37
Aligning Practice with Purpose	38
Sources of Evidence.....	39
Appraisal of Evidence.....	41
Evidence Generated for Doctoral Project.	41
Participants.....	42
Procedures.....	43
Protections.....	47
Analysis and Synthesis	48
Analysis Procedures.....	49

Summary	50
Section 4: Findings and Recommendations	51
Introduction.....	51
Sources of Evidence.....	51
Findings and Implications.....	52
Unanticipated Limitations.....	55
Implications.....	58
Recommendations.....	59
Contribution of the Doctoral Project Team	61
Process	61
Plans	61
Strength and Limitations of the Project	62
Strengths	62
Limitations	63
Recommendations.....	65
Section 5: Dissemination Plan	66
Analysis of Self.....	66
Completion.....	68
Summary.....	69
References.....	72
Appendix A: Continuing Education Evaluation Tool.....	84
Appendix B: Power Point Teaching Tool.....	85

Appendix C: Teaching Tools Provided for Providers During Inservice.....94

List of Tables

Table 1. Health Belief Model Applied to Immunization16

Table 2. Educational Intervention Discussion Points46

List of Figures

Figure 1. Evidence based pyramid of research19

Figure 2. Continuing education evaluation tool responses on Likert Scale.....54

Section 1: Nature of the Project

Introduction

Human papillomavirus (HPV) is the most common sexually transmitted disease in the United States (Grabiel et al., 2013). Researchers have identified more than 200 species of HPV, with 40 types being spread through sexual contact (National Cancer Institute, 2018). Nearly half of all HPV infections are with high risk or oncogenic strains, resulting in 5% of all cancers worldwide (National Cancer Institute, 2018). These high-risk HPV infections are well-known among researchers as cancer causing viral infections (National Cancer Institute, 2018). While it is difficult to assess the lifetime prevalence rates of HPV, existing data suggests that the rates range between 79% and 100% (Chesson, Dunne, Hariri, and Markowitz, 2015; National Cancer Institute, 2018).

“High risk” HPVs cause several types of cancer. Virtually all cases of cervical cancer are caused by HPV, and just two HPV types, 16 and 18, are responsible for about 70% of all cases. (National Cancer Institute, 2015). HPV Type 16 is associated with causing most anal cancers, with 95% of these cancers resulting from HPV infection (National Cancer Institute, 2018). HPV Type 16 infection is also a well-known risk factor for oropharyngeal cancers; with nearly 70% of these cancers resulting from HPV infection (National Cancer Institute, 2015). Less frequent occurring cancers that result from infection with high risk HPV include vaginal (65%), vulvar (50%), and penile cancer (35%) (National Cancer Institute, 2018).

Cervarix was the first vaccine to protect against HPV Types 16 and 18 (Mulcahy, 2016) and was released by GlaxoSmithKline (GSK) in 2009 (Brookes, 2016). Cervarix is

still available outside of the U.S. marketplace, with indications for use in females 9-45 years of age (Cervarix, Human Papillomavirus Vaccine Types 16 and 18 [Recombinant, AS04 adjuvanted] Consumer Medicine Information, n.d.). Gardasil (Human Papillomavirus Quadrivalent [Types 6, 11, 16, and 18] Vaccine Recombinant) released by Merck in 2006 is recommended for routine immunization against females only (Brookes, 2016). Despite each vaccine touting cancer prevention, the focus always remained on cervical cancer, which led to the feminization of the vaccines and impacted the public's perception of benefit to this recommended immunization (Daley et al., 2017). With Gardasil 9 (9vHPV) superseding Gardasil (4vHPV) immunization through inclusion of an additional five strains of HPV, Gardasil production ceased, leaving Gardasil 9 as the only HPV immunization on the U.S. market (Henry J. Kaiser Family Foundation, 2018). The various vaccine options, differing immunization schedules, the novelty of the vaccine(s), gender seclusion, and manufacturer updates further contributed to delayed recommendations for the vaccine(s) and the public's perceived benefits to immunization.

Oncogenic HPV strains were first identified as the cause of cervical cancer in the late 1970s (Faridi, Zahara, Khan, Idress, 2011). However, as cancer research emerges, researchers have learned that HPV viruses also have oncogenic propensity in males as well (Fardi et al., 2011). It was not until 2010 that Gardasil extended its labeling to include immunization against males (Brookes, 2016). With further research and advancements, Gardasil 9 entered the U.S. market in 2014 with indications for both males and females (Brookes, 2016). Today, Gardasil 9 is the only immunization that remains available for use in the United States and is indicated for protection against cervical,

vaginal, anal, and penile cancers linked to HPV infection females and males (Mulcahy, 2016). There is new research that suggest it also offers protection against many oropharyngeal cancers as well (Centers for Disease Control and Prevention [CDC], 2018a), though the package insert has not yet been updated to reflect this. After Merck introduced Gardasil 9 with broader recommendations for coverage, Cervarix was discontinued for use in the United States in 2016 (Mulcahy, 2016).

In 2013, 37.6% of eligible females and only 13.9% of males received the full series of Gardasil 9 vaccines (Lu et al., 2015; Roberts et al., 2015). As of 2016, over half of adolescents have started the HPV vaccination series (Perkins, 2017). However, this is below Healthy People 2020 target goals of 80% of adolescents having received the entire immunization series (Office of Disease Prevention and Promotion [ODPP], 2017). The statistics reflected by Lu et al. (2015) as well as Roberts et al. (2015) represent data like that of a local health care system where the teaching project occurred. This health care system has HPV immunization rates estimated at 14% in both males and females, 9-14 years of age. The data represents both partial and completed series spanning across 4vHPV and 9vHPV immunizations.

Frazer noticed that cervical cancer and anal cancers were directly linked to human papillomavirus infections (Gavi, the Vaccine Alliance, 2019). Frazer began creating a vaccine in hopes of eliminating these preventable cancers in the 1980s (Gavi, the Vaccine Alliance, 2019). By 2006, Frazer had developed an HPV vaccine and saw the vaccine make it through clinical trials and be applied to a population in Australia (Gavi, the Vaccine Alliance, 2019). Frazer believed that immunology from vaccinations is the next

greatest advancement in population health after clean water, as it yields the potential to save lives from preventable diseases (Gavi, the Vaccine Alliance, 2019).

The HPV vaccine protects individuals from nine of the most common sexually transmitted strains of HPV. Early vaccination, before sexual debut is key to HPV cancer prevention (American Academy of Pediatrics [AAP], n.d.a). Merck, as well as the American College of Obstetrics and Gynecology (ACOG), the American Academy of Pediatrics (AAP), and the American Academy of Family Physicians (AAFP) all endorse Gardasil 9 (Human Papillomavirus 9- valent Vaccine Recombinant) as a safe and effective early cancer preventing intervention immunization for adolescents. Despite emerging findings supporting this vaccination as cancer preventing and the endorsement to vaccinate early there is still parental hesitancy to immunize youth in the United States. Parents have vocalized concerns that providing their child with this vaccine will likely increase promiscuity and premature sexual activity (Boyce & Holmes, 2013). This has created a focus on the vaccine as one which protects against sexually transmitted disease and not cancer. Shifting the focus of the vaccine to the priority objective of cancer prevention, is an important step in advocating and promoting the purpose of the vaccine.

Healthy People 2020 is a federally sponsored program that aims to improve population health across the United States (ODPP, 2017). Each decade, health objectives are set to help achieve their mission, often focusing on currently identified health care disparities (ODPP, 2017). Healthy People has been creating scientifically based goals and objectives for the medical community to strive towards for the last three decades (ODPP, 2017). Various stakeholders within the health care community and the national

government help to draft the benchmarks for the decade (ODPP, 2017). HPV immunization was one measure that was identified as a health target in 2010, landing it on the Healthy People 2020 goals (ODPP, 2017).

Problem Statement

According to the Indiana State Department of Health's (ISDH) first annual School Coverage Assessment Data report for 2014-2015, only 9.2% of Indiana's sixth graders have had HPV immunization that matches the Advisory Committee on Immunization Practices (ACIP) guidelines (ISDH, n.d.). This likely would reflect partial immunization; however, the data could also reflect completed immunization. The data does not go into further description and fails to even list HPV on the county report for the same reporting year, likely due to such a low percentage of individuals complying with current ACIP recommendations. Records reflecting the percentage of sixth graders within the county where the project took place is not available, though a request has been sent to the state. Indiana is one of seven states with immunization rates of less than 49% for HPV (CDC, 2018b). Comparatively, most of the United States has immunization rates between 50-69%, with only another seven states achieving immunization rates above 70% and more closely aligned with Healthy People 2020 goals (CDC, 2018b).

Nursing practice is well-known for its holistic approach to patient care (The Importance of Holistic Nursing Care: How to Completely Care for Your Patients, 2019). Addressing a controversial immunization such as Gardasil 9 requires the Doctoral of Nursing Practice (DNP) student to incorporate a holistic approach to addressing a practice problem while placing the patient at the center of focus. Understanding how to

merge information about a sexually transmitted disease that has oncogenic properties with a focus on cancer prevention is ideal in achieving improved immunization rates, that will improve population health and reduce wasteful health spending (Bigman, Capella, & Hornick, 2010).

Purpose

HPV immunization is not required for school admission in many states and therefore parents commonly resist this immunization (Barrazza, Weidenaar, Campous-Outcalt, & Yang, (2016). Another influential factor that affects immunization against HPV is providers using mixed approaches when discussing the importance of this immunization with parents (Holman et al., 2014). Two commonly used approaches when discussing HPV immunization include a presumptive and a conversational approach, both of which have positive and negative implications in vaccination receptivity, which will later be explored in this paper. Previous researchers (Perkins & Clark, 2013) have suggested that provider recommendations are weak due to perception and or anticipation of parental refusal for this immunization, further complicating the problem and creating a gap in practice. The opposition and hesitancy to provide this immunization routinely has resulted in inadequate immunization rates and continues to leave youth vulnerable to common cancers secondary to persistent HPV infection(s) not cleared by the body. It also allows for excess expenditure related to high health cost associated with cancer treatment and surveillance.

Since provider recommendations' have been cited as a key determinate in HPV immunization (Fontenot, Kornides, & McRee, 2018), teaching providers how to

recommend this immunization to parents may be fundamental in increasing immunization rates to target goals. Because a parent's decision to vaccinate or not vaccinate may be influenced by a provider, the provider must first understand the benefits of the immunization, the associated risk profile, and feel comfortable communicating and discussing this information and, ultimately, make a strong recommendation for the vaccine.

Addressing the Gap in Practice

To address the current gap in literature and practice, a teaching project was proposed to help increase provider knowledge on how to recommend and discuss this immunization with parents and potentially increase immunization rates. "Health care providers' recommendations have been proven to be a key determinate of vaccination uptake [i.e., immunization uptake]" (Fontenot et al., 2018, p. 386), encouraging parental movement towards or against action. The AAP (2017) and the CDC (2018d), both note that a strong provider recommendation is pivotal in recommending HPV immunization.

The practiced-focused question guiding this project was *Does an education program using concepts from the health belief model (HBM) increase provider perception of preparedness on how to recommend Gardasil 9 immunization in adolescents?*

This educational intervention may increase immunization against HPV by up to 23% (Fontenote et al., 2018). Despite Gardasil 9 being strongly endorsed and part of the recommended immunization schedule, providers are falling short in making a strong and consistent recommendation for immunization in younger patients (Fontenot et al., 2018).

Decreasing the gap in literature and practice through educating providers on effective strategies of recommending an immunization such as Gardasil 9 is imperative to the promotion of population health.

Nature of Doctoral Project

The completed project was a staff education project that focused on educating providers on having effective conversations with parents about HPV vaccination. The target sample included primary care providers working in outpatient hospital associated clinics. The affiliated pediatric practices and gynecological practices were also offered the opportunity to participate in the educational opportunity. Those in attendance were clinicians from each of the practice areas identified above except for pediatrics and gynecology. The healthcare system is an independently owned hospital in Indiana. While the hospital is geographically located centrally, many of the communities it serves fall into rural healthcare areas. Many of the outpatient clinics are located on campus, however there are several providers who also travel to the hospital for administrative and educational task. The project occurred at the healthcare system's main campus. All attendees were invited through the hospital's email server.

A comprehensive literature review was conducted through Walden University's library database using predominantly CINHALL and MEDLINE from 2016-2019. Best practice guidelines for evidence appraisal were applied to all searched results. Among the data yielded how the recommendation is made matters. A presumptive recommendation also known as an announcement method in existing literature (AAP, 2017) is the strongest supported approach to recommending HPV immunization.

The guiding framework for this education project focused on increasing HPV immunization is the HBM. The HBM constructs will support the standardized approach (same day, same way approach coined by the CDC (2018dc) to recommending HPV immunization. Evaluating the impact of this teaching project is feasible within this setting through application of the standardized post education assessment questionnaire used within the institution's healthcare system.

Current vaccination rates for HPV in the clinics reflect rates of 14%, far less than current targets of 80% and consistent with the findings of Healthy People 2020. Successful application of the information presented in this educational program may ideally increase vaccination rates and promote a change in current practice throughout the organization and in other primary care and pediatric practice settings.

Significance

Stakeholders

Immunization guidelines as set by ACIP (2018) and the CDC (2018c) recommends HPV vaccination to be administered to adolescents, both boys and girls, between 11 and 12 years of age. However, high-risk candidates can receive the immunization series starting at 9 years of age (CDC, 2018c). Existing research has even suggested that when the immunization series is started before the age of 15, two immunizations provide a higher immune response than three provided after age 15 (Khurana, Montague, & Wiesmann, 2016). This is due to an enhanced immune response promoting better efficacy and immunity against HPV infections (Khurana et al, 2016). This finding ultimately changed the labeling of Gardasil 9 in 2017 (Khurana et al., 2016).

Additional organizations that support HPV immunizations per CDC and ACIP guidelines includes ACOG, AAFP, AAP, and American Society of Clinical Oncology (ASCO). This is not an all-inclusive list but reflects that stakeholders across the patient's lifespan and of different practice areas support this immunization and believe in its ability to improve population health through cancer prevention.

Contribution to Nursing Practice

This teaching project lays the groundwork for future research that seeks to increase provider knowledge of making a firm recommendation for Gardasil 9 and its cancer preventing benefits. Since vaccination receptivity is less than desired and the problem stems not just from parental opposition, but poor and inconsistent provider recommendation (Haelle, 2015), by equipping providers on how to have better conversations with parents about HPV, immunization rates are expected to increase. Due to some of the challenges within the current health care infrastructure, it may take a series of actions to improve the HPV vaccine immunization process and ultimately raise rates to those held by Healthy People 2020. With my project, I sought to strengthen the current process through standardizing the approach by using a presumptive method and teaching providers how to have a conversation with parents about a current controversial vaccine. With vaccines for other sexually transmitted diseases currently being studied, health providers need to understand how to encourage patients to be stewards of their own wellness journey.

Generalizability

Upon completion, the provider educational initiative has the potential to be delivered to providers in other facilities. Targeting HPV immunization rates aligns with all required criteria for DNP attainment at Walden University. This simplified process will improve the current standard of practice as supported in existing research and ideally will encourage other primary care practitioners to institute the recommendation into practice to help improve the health of their patients. In addition to influencing current practice change, this project can be applied to other areas of practice, improving health care systems on a larger scale. The practice change is not only supported in literature, but is affordable, efficient, and delivers the right care to the right individual, at the right time. Implementing the proposed change may enhance workflows while simultaneously improving population health.

Implications for Social Change

Understanding how to discuss tabooed topics is essential to health and wellness. HPV immunization is a prime example of how providers have uncertainty discussing topics that are viewed as uncomfortable but are still very much important to overall health. Learning how to discuss a sexually transmitted viral infection that causes cancer and its antidote with parents is a novel approach to learning how to discuss other health related behaviors and topics with our patients and has numerous benefits, such as enhancing patient provider relations and encouraging shared decision making with the patient. If health care providers can communicate the importance of receiving HPV

immunization, more adolescents may get immunized and thereby reducing the likelihood of developing HPV-related cancers.

Summary

Tackling cancer rates through educating providers on how to make a recommendation for a particular immunization seems like it would be an outdated idea during a time when most individuals know someone with cancer or have lost a loved one to cancer. Unfortunately, when the cancer can result from a persistent viral infection obtained years before its oncogenic manifestations this is not the case. Of three vaccines originally marketed for cancer prevention; Gardasil 9 is the only immunization available that can prevent cancer caused from the HPV virus (Brookes, 2016). Sadly, when parents fear giving their child this immunization and providers are poorly equipped in discussing this vaccine it leaves youth vulnerable to preventable cancers.

I sought to help bridge the gap that exists between literature and practice and to help guide providers in having successful discussions with parents about protecting their child's health. In Section 2, the background and context of Gardasil 9 will be further explored. Additionally, incorporating the HBM into the educational activity will ultimately help increase immunization rates. The role of the DNP student and my interest in topic will be outlined within the context of the project.

Section 2: Background and Context

Introduction

Literature reflects that presentation is key to parental receptivity of immunization with this more controversial vaccine. In a literature review on HPV, 10 of 11 studies analyzed reflected a mean average of 34.7% immunization completion (Bartlett & Peterson, 2011). Healthy People 2020 supported this data in their current report on immunization rates for HPV. These rates are far below the target goal of 80% (AAP, 2017). Educating providers on how to have conversations about HPV immunization effectively is crucial in bridging the gap that exists between current practice and ideal outcomes (Perkins, 2013). This section will explore specific health behavior theories, the relevance of this project to nursing, the local background and context and the role of the DNP student, and the project team.

The consistent demonstration of Gardasil 9 as an effective means of cancer prevention has prompted the recommendation that HPV vaccination should be given at every clinical opportunity (Reagan-Steiner et al., 2015), based on current recommendations. While scientists are still working on better understanding the most efficacious ways of promoting vaccine acceptance among vaccine-hesitant parents (Opel et al., 2015), many sources exploring HPV vaccine resistance and uptake in parents have linked a strong provider recommendation with increased acceptance. Clark, Cowan, Filipp, Fisher, and Stokley (2016) reported the physician recommendations as critical, others note it as “the most important determinant” (Perkins & Clark, 2013, p. 828). Through a presumptive recommendation, it is believed that the strong provider

recommendation will reflect as pivotal in increasing HPV vaccination rates (Holman et al., 2014).

While many studies have assessed and analyzed the importance of communication on parental acceptance of HPV, there is still resistance among the health care community to adhere to best practice recommendations when offering HPV vaccination. While there is little existing research on the continued resistance towards Gardasil 9 immunization, some existing research suggests that providers are uncomfortable to initiate the discussion for fear of parental disagreement (see Haelle, 2015).

Current literature, however, reflects that a presumptive recommendation is the most successful, as it does not isolate the vaccine and prompt parental hesitance (Gilkey et al., 2016). When the provider recommends and provides education about the vaccination in a similar fashion as other important immunizations required in adolescents, it decreases the isolation and stigma associated with HPV immunization. According to Opel et al. (2015), “There is concern that providers’ use of presumptive formats to initiate vaccine discussions, despite precipitating less verbal resistance from parents during visits, “may negatively affect parents’ experiences” and “result in decreased vaccine uptake over time” (Opel et al., 2015, p. 1998). However, emerging information from research in practice, suggest that conversational approaches (involving extensive dialogue between the provider and patient) towards Gardasil 9 are inferior compared to announcing immunization (Brewer et al., 2016). Low immunization rates, both initiated and completed, are supported in current data for Gardasil 9 series, reflecting rates far less than target goals of 80% (AAP, 2017). How the vaccine is presented and recommended

matters. While some believe a concise approach is best, others find it may cause distrust; though all agree a strong recommendation promotes vaccination.

Concepts, Models, and Theories

Many concepts have been explored in seeking to understand the current opposition to HPV immunization. Concepts documented throughout existing literature include parental hesitance, a weak provider recommendation, and poor understanding of risks and benefits of immunization (Gilkey et al., 2016). These concepts are common themes when researching HPV immunization. Even Merck, who manufactures Gardasil 9, supports a strong recommendation from clinicians to effectively promote immunization (Merck, 2016). Understanding how to make a presumptive recommendation with a concise approach and focus on cancer prevention is key when responding to parents and adolescents who have questions or wish to pursue additional dialogue.

Theoretical Concepts and Models

Models such as the HBM are also prevalent and frequently referenced within the literature. The HBM focuses on six constructs that influence a patient's decision to elect or opt out of a treatment plan (Glanz, Rimer, & Viswanath, 2016). The six constructs include (a) perceived susceptibility, (b) perceived severity, (c) perceived benefits, (d) perceived barriers, (e) cues to action, and (f) self- efficacy (Glanz et al., 2016). Each of these constructs is influenced by modifying factors which explore the constructs before resulting in an independent action (Glanz et al., 2016). This information was adapted with permission and is reflected in Table 1.

Table 1

Health Belief Model Applied to Immunization

Concept	Definition	Application
Perceived susceptibility	Concern for odds of contracting HPV over one's lifetime	Define population risk, lifetime prevalence. Align risk with individual patient.
Perceived severity	Concern for how threatening HPV infections are or how great the risk of complication is.	Define infection (acute and persistent). Discuss complications of disease infection. Review mortality.
Perceived benefits	Assessed value of immunization in regard to decreasing chance of developing HPV infection or complications	Discuss immunization guidelines and recommendations. Review importance of research supporting recommendations.
Perceived barriers	Concern for complications post immunization.	Discuss parental concerns. Discuss provider concerns.
Cues to action	Engaging readiness to act	Educate providers on discussing HPV immunization with parents. Introduce CASE acronym. Share evidence-based practice that has increased immunization rates.
Self-efficacy	Viewing oneself as able to attain desired health through action.	Increase overall knowledge. Reduce anxiety about immunization. Equip with tools for successful implementation.

Note. Adapted from “Making sense of perceptions of risk of diseases and vaccinations: a qualitative study combining models of health beliefs, decision-making and risk perception,” by Bond, and Nolan, 2019, *BMC Public Health*, 11. Open Access.

My goal with this project was to increase HPV vaccination rates to their recommended levels of 80% through educating staff on the HBM constructs and incorporating a new process of making a presumptive recommendation to increase current vaccination rates thus, improving the overall healthcare of the adolescent and young adult population of the community. This simplified process may improve the current standard of practice as supported in existing research and may encourage other primary care practitioners to institute the recommendation into practice to help improve the health of their patients. In addition to influencing other practitioners to change their current approach, this project can be applied to other areas of practice, improving health care systems on a larger scale.

Arguably, the six constructs could be incorporated to more elaborate conversations about the HPV immunization, though they may be addressed in a concise approach coined by Merck. Merck (2016), the manufacturer of Gardasil 9, proposed that providers use the CASE acronym, when discussing Gardasil 9 with parents. The CASE acronym stands for *Cancer Prevention, Adolescent Immunization, Safety Profile, and Exposure* (Merck, 2016). The CASE acronym correlates with the six constructs of the HBM. The AAP and CDC also have tools available for providers to use when discussing HPV immunization with parents; many of their tools focus on the vaccine preventing cancer, giving the immunization between 11 and 12 years of age, and the immunization being safe and effective. Because of the AAP (2017) and CDC's (2018d) position that a strong provider recommendation is pivotal in recommending HPV immunization elaborate discussions, also known as a conversational approach, have been suggested to

negatively influence immunization and therefore a more concise approach is strongly promoted throughout literature (Brewer et al., 2017). Making a presumptive recommendation implies that the parent will elect to immunize their child against whatever disease(s) is indicated for their age (Brewer et al., 2017). The HBM constructs encourage concise and effective discussions regarding HPV immunization. Since how the vaccine is recommended matters; using a standardized approach that emphasizes the importance of 9vHPV in an informative, yet concise, and nonbiased approach is key.

The HBM, although originally created as a psychological theory, is applicable in nursing practice as it helps to explore and explain health behaviors (Health Belief Model, 2012). Despite the current literature available on HPV immunization uptake, there is still much to be learned by applying the HBM to current practice. The psychological constructs of the HBM help nursing scientist to understand the driving external forces which promote preventative health measures and ensure enhanced practice outcomes (Turner, Hunt, DiBreezo, & Jones, n.d).

Since the HBM explores influential factors related to health promotion behaviors, understanding current parental and provider knowledge of persistent HPV infection is key to education initiatives in the future. Making a presumptive recommendation for vaccination however, assumes that the benefit is greater than the risk and proactively increases population health. Despite a presumptive recommendation being used, parents may elect to further discuss HPV immunization with the provider before their child receives the vaccine thus, allowing the opportunity to focus more on the constructs of the HBM in practice application. This is also a time to acknowledge parental concerns and

reinforce benefits of HPV immunization. The CDC (2018d) has drafted an educational tool for providers (available online) suggesting how to respond to parental concerns regarding HPV immunization. The concepts reflect concise responses that reinforce the constructs relative to the HBM (CDC, 2018d). Many of the HBM constructs are aligned to talking points outlined by the CDC in Table 1. The AAP (2019) also has materials available through the HPV Champion Toolkit targeted at parents that speak to many of the constructs within the HBM. The American Cancer Society (2017) has also produced an infographic focused on concise yet important reasons for HPV immunization to be given between 11 and 12 years of age.

Modifying factors of the HBM related to HPV immunization include the parent, the youth, age, education, awareness of risk and consequences, accessibility, affordability, and the provider's delivery of the recommendation (Opel et al., 2013). Various clinicians have sought to better understand the influence of the modifying factors through qualitative research (Bigman, et al., 2010; Eby, 2017; Mehta, Sharma, & Lee, 2013). To date, the medical community still does not clearly understand all the modifying factors and their relationships to HPV immunization (Grabiell et al., 2013). Incorporating the HBM constructs into the recommendation for HPV immunization is thought to be essential to increasing immunization rates of both male and female adolescents (Eby, 2017; Mehta et al., 2014). Applying the HBM as a theoretical underpinning while making a presumptive recommendation is only going to be reflected after years of application. One recurring theme throughout literature reviewed is that how the recommendation is made matters (Liddon, Michael, Dittus, & Markowitz, 2013; Opel et al., 2013;).

Presumptive recommendations have worked well in other disease states, but has been ineffective in HPV (Gilkey et al., 2016). A presumptive recommendation assumes that the parent is willing to proceed with following the standard immunization schedule, whereas a participatory recommendation allows the parent to decide which immunizations the child will or will not be receiving during the encounter (Opel et al., 2013). Bigman et al., (2010) note attribute framing, in health communication, is a concept explored by Kahneman and Tversky suggesting that “people make inferences based on the context in which choices are presented”. One reason HPV immunization is less than ideal in part may be due to the lack of understanding of how best to make the recommendation. While some researchers have looked at demographics, others have looked at the crafting of the message to explain immunization rates. Possibly the missing link is crafting the message effectively to all demographic populations.

Evaluating existing literature and grading it for scientific rigor with a level of evidence appraisal system is important to controlling bias and supporting a nonbiased recommendation for HPV immunization in adolescents. The pyramid of nursing research hierarchy was used to appraise the existing literature resulting from the data base searches. The evidence-based medicine pyramid/ the pyramid of nursing research hierarchy is depicted in Figure 1.

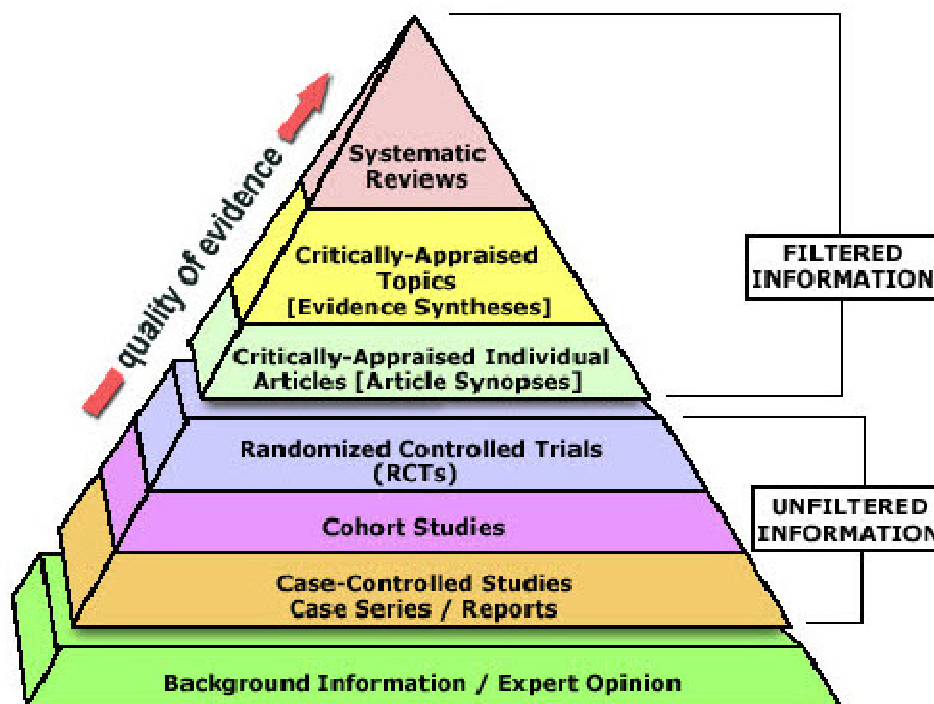


Figure 1. Depiction of evidence appraisal system. Adopted for use from Walden University “Evidence-Based Practice Research: Levels of Evidence Pyramid” Produced by Jan Glover, David Izzo, Karen Odato, and Lei Wang. Copyright 2006, by Trustees of Dartmouth College and Yale University. Adopted with permission.

Definition of Key Terms

Adolescent: An individual 11-17 years of age (Cates, Ortiz, Shafer, Romocki, & Coyne-Beasley, 2012).

Clinicians: All clinical staff: physician, physician assistant, nurse practitioner, medical student, nurse practitioner student, physician assistant student, nurse, medical assistant, or nursing/ medical assistant students within the clinical setting (Bigman, et al., 2010).

Cost burden: Total sum of all education, screening, and treatment of a disease state (CDC, 2013a).

High risk for HPV: Immunocompromised state, including HIV and those who have been sexually abused or assaulted (CDC, 2018c).

HPV immunization: Cervarix, Gardasil, or Gardasil 9 vaccine (Dekker, 2006).

HPV infection: Having any HPV strain diagnosed or undiagnosed by standard screenings (Shanmugasundaram & You, 2017).

Immunization Uptake: Receipt of the recommended immunization (Griffioen, et al. 2012).

Inadequate immunization rates: Immunization rates less than 80% for target population (ODPP, 2017).

Mandate: State-governed enforcement of a recommendation, typically enforced with school or daycare admission (AAP, 2017).

Medical community: Hospital systems, networks, inpatient and outpatient clinics, and staff members (Eby, 2017).

Parent: The responsible party involved in medical decision of patient. (Edwards, Hackell, 2016).

Patient: Any individual presenting for medical care or authorized to make medical decisions on the behalf of the recipient receiving medical care (Ziarnowski, Brewer, & Weber, 2009).

Persistent HPV infection: Any infection from an HPV strain that is not cleared from the body in 6 months (Shanmugasundaram & You, 2017). May or may not be an incidental finding on abnormal pap smear results (Shanmugasundaram & You, 2017).

Practitioners: Any licensed physician, physician assistant, or nurse practitioner (Bigman, et al., 2010)

Presumptive recommendation: The assumption that current recommendations and standard of care are desired by the patient seeking medical care (Brewer et al., 2017).

Provider: Any physician, physician's assistant, nurse practitioner, medical student, nurse practitioner student, or physician assistant student (Bigman et al., 2010).

Sexual activity: Any contact that occurs between two individuals with the purpose of sexual arousal- including but not limited to penetration and oral sex (Mortensen, Adam, & Idtaleb, 2015).

Youth: Inclusion of any child 9 to 17 years of age (Meites, Kempe, & Markowitz, 2016).

Relevance to Nursing Practice

Cervical cancer deaths may be reduced by as much as two thirds with immunization rates of 80% (Boyce & Holmes, 2013). “The Journal of Infectious Diseases reveals that since the vaccine was introduced in 2006, vaccine-type HPV prevalence decreased 56 percent among female teenagers 14-19 years of age” (CDC, 2013b, para. 1). Likewise, vaccination rates above 95% ensure herd immunity (Zangger Eby, 2017), a necessity of public health maintenance. Public health dollars and medical spending can significantly be reduced through increasing vaccination uptake of HPV. Ninety percent of genital warts are caused by two common strains, in which HPV vaccination offers protection against (Bigman et al., 2010). HPV is associated with nearly 100% of all cervical cancers and their precursors worldwide (Arrossi et al., 2017) and could be

dramatically reduced with adoption of recommended immunization practices. Seventy percent of the cervical cancers originate from HPV infection with strains 16 and 18 (Grabiell et al., 2013). HPV associated oropharyngeal cancers average almost 9,000 annually, with a majority of these cancers also being preventable with 4vHPV and 9vHPV (Kram, Schmidt, Saghezchi, & Russell, 2015).

Conducting scientific research and analysis, such as the educational intervention, helps to identify the risks and benefits of the current recommendations and helps drive understanding of both immunology concepts and health promotion (National Academy of Sciences, National Academy of Engineering, and Institute of Medicine (US) panel on International Benchmarking of US Immunology Research, 1999). The National Cancer Institute a subsidiary of the National Institute of Health (NIH), has published the following claims: “In the trials that led to the approval of Gardasil and Cervarix, these vaccines were found to provide nearly 100% protection against persistent cervical infections with HPV types 16 and 18 and the cervical cell changes that these persistent infections can cause. The trials that led to approval of Gardasil 9 found it be nearly 100% effective in preventing cervical, vulvar, and vaginal disease caused by the five additional HPV types (31, 33, 45, 52, and 58) that it targets.” (National Cancer Institute, 2018, para. 10).

The National Cancer Institute further notes that a phenomenon such as cross-protection was observed with clinical trials of Cervarix, which is no longer available in the United States due to inferiority when compared to 4vHPV and 9vHPV (Mulcahy, 2016). The National Cancer Institute found that during a 4- year period in Australia,

genital warts decreased in both males and females, when high immunization rates were provided to females only (2018). While ongoing research is helping us to further understand how long protection is offered from the immunization, researchers believe it to have lasting effects for nearly a decade (Markowitz, 2018).

Practice Problem

Since the debut of Cervarix and recommendations for routine immunization, there has been opposition to the vaccine from parents and clinicians alike (Haelle, 2015). The opposition and hesitancy to provide this immunization routinely has resulted in inferior immunization rates and continues to leave youth vulnerable to common cancers secondary to persistent HPV infection(s) not cleared by the body (Cates et al., 2012).

Low HPV initiation and completion rates are multi factorial in origin as noted by Grabiell et al., (2013). Existing nursing and medical literature suggest poor HPV vaccination uptake rates can be attributed to weak provider recommendation, misconceptions of perception and receptivity about HPV vaccination between parents and clinicians during appointments, and knowledge deficits of parents and providers alike (Katz et al, 2016, Liddon et al., 2013). Merck has strongly supported advertising 4vHPV and 9vHPV as cancer preventing immunizations to help refocus parents and providers concerns regarding HPV immunization. Cervarix was also promoted as a cancer preventing immunization while in the U.S. market (Mulcahy, 2016). Cervarix offers protection against HPV types 16 and 18, both of which have oncogenic propensity (Cervarix Human Papillomavirus Vaccine Types 16 and 18 (Recombinant, ASO4 adjuvanted) Consumer Medicine Information, n.d). Merck pushed the cancer prevention

ideology following realization that despite three available vaccines on the market for cancer prevention, there was still resistance to the immunization due to negative perceptions about the sexual transmission of HPV and youth. Since vaccination is most effective before sexual debut, promoting vaccination effectively is key to cancer prevention (Lockwood-Rayermann & McIntyre, 2009). The American Society of Clinical Oncology (ASCO) recommends HPV immunization as well (Mulcahy, 2016). Most of the literature emphasizes that presentation is key to parental receptivity of immunization with this more controversial vaccine (Liddon et al., 2013, Kester et al, 2013, and Todorova, Alexandrova-Karamanova, Panayotova, Dimitrova, & Kotzeva, 2014).

The delayed implementation reflects a clear need for an educational project that starts at the foundation of the problem; educating providers on how to have reproducible and effective conversations with parents. The emerging evidence and findings will contribute to the nursing profession and guide nurse practitioners and other providers to implement similar improvement initiatives in their practice settings to address similar concerns.

Practice Recommendations

As the health care system strives to reduce disease burden and cost across the nation, improvement on preventative health is essential (Institute of Medicine, 2010). Providers and other health care professionals need to work together to find approaches based in science; that enhance patient care delivery systems and yield desired outcomes. Delayed translation of evidence into practice is a well-known concern throughout research driven clinical practice, with delays averaging 17 years (Morris, Wooding, and

Grant, 2011). Our nation's health cannot afford further delays in care improvement. Innovative and evidence-based practices need to be implemented efficiently and effectively, with cost containment considerations.

Targeting HPV immunization rates aligns with Healthy People 2020 goals; because of the related disease burden with chronic HPV infection and oncogenesis, objectives were drafted addressing HPV transmission through promotion of HPV vaccination (Kester, Shedd-Steele, Dotson-Roberts, Smith, & Zimet, 2014). However, since it has been highly controversial since its debut, there has been much resistance from vaccine-hesitant parents as a result of negative media attention, religious resistance, and provider hesitance (Griffioen et al., 2012). It is time to address the issues hindering uptake and modify current practice.

Immunization guidelines as set by The CDC and the ACIP recommends HPV vaccination to be administered to adolescents, both boys and girls, between 11 and 12 years of age. However, high-risk candidates can receive the immunization series starting at 9 years of age (CDC, 2018c). Late in 2018, the CDC made the recommendation to extend Gardasil 9 immunization in men and women 26-45 years of age (Markowitz, 2018). This recommendation came from information in Merck's phase three trial pertaining to Gardasil 9; the study supports immune response for at least 10 years after the vaccination is given (Advisory Council on Immunization Practices [ACIP], 2018). Extending this recommendation to older women and men helps to address the second peak in HPV infection that is commonly seen between 35 and 55 years of age in women (Harper and Vierthaler, 2011). Given the momentum in healthcare to incorporate

evidence-based research into practice, making a strong recommendation in a timely fashion addresses the current gap in practice.

Strategies for bridging the gap. Many theorists have developed grand theories placing the patient at the center of nursing care; these scientists have contributed to nursing through analysis and synthesis of information obtained in the field of nursing (Hoeck & Delmar, 2017). They have collected information from practice and observation, and they have laid the groundwork for future nursing researchers (Hoeck & Delmar, 2017). This project aligns with that premise. As a DNP trained nurse, a project that focuses on understanding what drives and influences population health further contributes to the holistic model upon which nursing practice is based. This teaching project will apply concepts found in research to address deficient and practice gaps that seek to improve population health. Closing the gap between evidence and practice, by addressing inefficient approaches to increasing HPV immunization through enhanced educational awareness. Although the project occurred in an urban area, its potential to influence nursing practice can be seen at the state and even national levels.

Nurses are known for their holistic approach to healthcare, differentiating us from other clinicians. While many studies have assessed and analyzed the importance of communication on parental acceptance of HPV, there still is resistance among the medical community to adhere to best practice recommendations when offering HPV vaccination (Warner et al., 2017). The delayed uptake in implementation of effective and concise conversations with parents about HPV immunization, reflects a clear need for a teaching project that is reproducible and effective. Initiating an educational project that

educated providers on how to engage parents in dialogue about Gardasil 9 that is measured with a simple standardized questionnaire seeks to improve immunization rates. The emerging evidence and findings can contribute to the nursing profession and guide nurses to implement similar teaching initiatives in their practice settings to address similar concerns.

According to the American Association of Colleges of Nursing (AACN), a DNP prepared nurse will focus their studies on a practice focused research application as part of the requirements to obtain a terminal degree (AACN, 2006). Doctoral prepared nurses must reflect leadership in practice through scientific inquiry and practice (AACN, 2006). Evidence based guidelines can be translated and synthesized into clinical practice when concepts, models, and theories guide practice-based research (AACN, 2006). Findings from practice-based research versus philosophical research shape nursing as a profession, contributing to the existing scientific body (AACN, 2006). Nursing scientist reflect their professional dedication to improved care through researching and evaluating current approaches to care delivery systems (AACN, 2006).

Local Background and Context

The United State Census Bureau reports that there are just under 6.7 million residents in Indiana, with 23% of the population being identified as youth (2017). Indiana is one of seven outlying states that has inadequate immunization rates against HPV (CDC, 2018b). Indiana's youth is far below target goals for HPV immunization, with under 10% of adolescents having received HPV immunization (IDSH, n.d.).

Persistent HPV infection has been linked with cervical, vaginal, vulvar, penile,

rectal, and oropharyngeal cancers in both men and women (AAP, 2017). HPV infection is also responsible for the majority of genital warts (Todd, 2017). Many have postulated that parental and religious opposition to the immunization is centralized around its benefits of providing protection against sexually transmitted infections, such as genital warts (Kester et al., 2012). Coupled with parental concerns that providing their child with this vaccine will likely increase promiscuity and premature sexual activity (Boyce and Holmes, 2013) has enhanced the focus on the vaccine as one which protects against sexually transmitted disease and not cancer. Hence, shifting the focus of the vaccine on cancer prevention is key.

Institutional Context

The doctoral project took place in an urban healthcare system in Indiana. The outpatient primary care clinics are comprised of predominantly physicians and nurse practitioners, with 23 providers in total. There are approximately 50,000 patients included in the practices' patient panels. Demographically, about 3,000 of these patients are youth, between 9-14 years of age. All providers were invited to the monthly lunch in-service, known as the round table. The providers who attended were educated on how to facilitate a strong recommendation for HPV immunization rooted in application of the health belief model. Provider's knowledge of the content of the educational program, on how to approach the discussion with parents utilizing an evidence-based approach, was evaluated for enhanced content knowledge and comfort with a questionnaire following the in-service. The questionnaire is a standardized evaluation tool used within the healthcare system for all teaching events.

In addition, increasing HPV vaccination in the primary care setting addresses one of the Health Effectiveness Data Information Sets (HEDIS) measures, which not only promotes improved healthcare through attainment of quality metrics, but also influences reimbursement (National Committee for Quality Assurance [NCQA], 2018). This is beneficial because the health care system is transitioning to a pay for performance model where high-quality care is reimbursed and substandard care is penalized. Furthermore, the healthcare network is one of the few independently owned hospitals in the area. Therefore, lost revenue due to low immunization rates (i.e. substandard care) has the potential to significantly influence the economical fate of the hospital when paired with other penalties. Lastly, the teaching project not only met the DNP Walden University Education Manual criteria, it also aligns with DNP essentials as set forth by the AACN, and standards of practice set forth by the American Nurses Association (ANA).

Federal Context

The cost burden of HPV infection is thought to be second highest to that of human immunodeficiency virus (HIV) (CDC, 2013a). Cost is tabulated after taking into consideration the cost of preventative screenings, treatment of abnormal pap smears, repeat testing for surveillance monitoring; in addition, costs affiliated with treatment of genital warts and cancer related treatments. In 2015, a study estimated the direct medical cost of preventing and treating HPV infections to be eight billion dollars (Chesson, Donatus, Mona, Meg, & Douglas, 2012).

During a time when the US health care system is seeking to reduce cost and improve care outcomes, focusing on prevention is essential to achieving these goals.

Promoting HPV immunization at target rates, can reduce the cost burden on the health care system while improving the overall population health of today's youth. With Gardasil 9 being a recommended adolescent immunization, coverage and access to the immunization is enhanced. Sadly, the lack of state mandate also influences series initiation and completion rates.

Educating providers on having appropriate conversations about Gardasil 9 helps to explore the relationships between current immunization practices and guidelines. The teaching project evaluated teaching objectives that focused on enhanced knowledge content about recommendations for Gardasil 9. These findings contribute to the current body of literature that seeks to understand the relationships that exist between the two. Subsequently, the end goal of the project was to increase HPV immunization rates to the target goal of 80%; similar to that of Tdap and Meningococcal rates currently (NCQA, 2018). Knowledge gained from the educational intervention has potential to be applied in various practice settings where immunizations are provided, thus increasing immunization rates to target goals outside of primary care.

Role of the DNP Student

Professional Context

As the DNP student I was the project manager and responsible for designing, implementing, and reviewing the completed attendee evaluation forms for the proposed teaching project. I analyzed the evaluations from the educational presentation. I launched an educational in-service that focused on evidence-based recommendations for practice and helped the organization to synthesize the material efficaciously.

I work in the primary care setting in a rural health care clinic where I provide care to individuals of all ages. As a mother of three, I can relate to parental concerns about recommendations for or against immunization. Like many of the parents and children I provide care to, I understand the importance of knowing that the decisions we are making for our children are the best decisions. I share their concerns about safety, efficacy, and necessity (especially as it relates to concerns about promoting promiscuity), and I treat my patients like family.

Within this setting, I can also appreciate the lack of available resources and tools that many of the patients I care for have within their reach. While cervical cancer screenings are typically covered under preventative health, I provide care for many women who have not remained active in screening for a multitude of factors; some of which have had a history of abnormal pap smears from persistent HPV infections. Many oral cancers have also been attributed to persistent HPV infection (Markowitz, 2018) and there are many individuals who do not have access to routine dental care. While screening helps to detect abnormal findings early, a vaccination such as Gardasil 9 also offers an additional safety net for the future generation of men and women within the community (ACIP, 2018). Many of which, may neglect recommended health screenings for reasons outside of accessibility. Making a strong recommendation for Gardasil 9 is critical to ensuring health promotion for today and future generations.

Motivation for Project

In pursuit of attaining my DNP, I wished to explore something that I wanted to learn more about that would not only benefit my family, but also impact population

health. Immunizations seemed like a great topic to pursue advanced knowledge on, as I wanted to support my patients who had concerns or reservations about a particular vaccination, while providing a balanced perspective on risks versus benefits. Through applying scientific research methods to my data collection and review I was able to scientifically conclude that immunization against HPV is in the best interest of my children and the families that I provide care for.

Biases

Over the course of my DNP, I learned about the importance of critically appraising evidence to avoid implementing findings from poor quality research. I applied these basic concepts as I explored immunology and HPV immunization; ultimately influencing my previously undetermined stance on this particular immunization. Through continual reflection on information provided by my literature search, immunology education and current and historical practice experience, I am able to control my personal bias. Focusing on recommendations backed by the CDC and AAP also helps to reduce personal bias that may be associated with the potential bias of the vaccine's value from the manufacturer, Merck.

Role of the Project Team

The project team incorporated team members within the organization interested in increasing HPV immunization rates. The chief medical officer (CMO) as well as the chief nursing officer (CNO) also served on the project team. Their roles focused on the educational in-service aspect to ensure the information was rooted in sound evidence before dissemination. The clinical quality team manager assisted in identifying current

HPV immunization rates within the organization as well as heading up an HPV immunization improvement project. Attendees also served as part of the project team as they provided feedback on the information presented.

Prior to selecting the presentation time, the proposed teaching project was presented to the CMO. Once they approved the presentation, and with Walden's institutional review board (IRB) approval (04-04-19-0397799) the educational activity was scheduled. Emailed invitations were sent to all clinical team members inviting them to the scheduled round table educational event. Attendees were provided with patient resources (found in Appendix C) to aid in educating parents and adolescents on HPV infection and immunization. Additional resource links were also included within the power point which served as the primary teaching tool in this educational intervention. How these resources are utilized within the practices will ultimately be decided on by the individual providers. Information for parents and providers alike focused on the cancer preventing benefits of Gardasil 9 immunization.

I performed a comprehensive literature review for the purpose of better understanding each of the constructs of the HBM in relation to HPV immunization. Through enhanced knowledge of the topic, I was able to educate staff members within the health care facility about preferred conversational approaches on HPV immunization supported by the CDC, AAP, and ACS. Staff education focused on the design, safety and efficacy of Gardasil 9 immunization. Attendees completed an evaluation of material content as it related to enhanced knowledge following the in-service.

Summary

Using a theoretical model such as the HBM, to support teaching points, was essential in enhancing provider knowledge of factors that drive medical decision making in patients. Through a deeper knowledge of intrinsic and extrinsic forces that lead to a health promotion, clinicians are able to confidently discuss HPV immunization with their patients. Evidence based practice synthesis and translation will promote overall population health, both locally and nationally. The project team ensured the information presented was of scientific rigor and used the educational opportunity as a means of promoting HPV immunization within the local organization. In section 3, the current literature and evidence of this topic is presented and evaluated for applicability as well as strong scientific underpinnings.

Section 3: Collection and Analysis of Evidence

Introduction

Health care delivery systems are changing to meet the diverse needs of patients, families, and communities. Health systems, like many other industries, are seeing numerous changes and are challenged to keep pace while enhancing outcomes. Meeting change with leadership and evidence-supported practice guidelines helps to ensure that care is personalized and more efficient than ever before (Morris et al., 2011). Addressing HPV immunization with a standardized process may help to ensure that all appropriate patients are immunized and protected in a timely fashion. The following sections will further explore how current evidence-based findings can be applied to practice to help promote enhanced outcomes in population health.

Practice-Focused Question

Rates of adolescent immunization vary greatly, with nearly two-thirds of adolescents receiving the recommended Tdap and Meningococcal immunizations, but only one-fourth to one-third receiving HPV immunization as recommended (Federal Interagency Forum on Child and Family Statistics, 2016). Unlike young children, adolescents do not commonly present to the office for well adolescent checks, making it even more important to address immunizations at every available opportunity (Wong, Taylor, Wright, Opel, & Katzenellenbogen, 2013). For this reason, the CDC (2018d) promoted making the recommendation the same day, the same way. Promoting provider confidence in making the recommendation for HPV is essential to helping reduce the gap in practice and increase immunization rates to target levels. The practiced-focused

question is: Does an education program using concepts from the health belief model (HBM) increase provider perception of preparedness on how to recommend Gardasil 9 immunization in adolescents?

Aligning Practice with Purpose

Providing youth with Gardasil 9 immunization is recommended and endorsed by numerous organizations. The CDC recommends providing HPV immunization between ages 9-14 with a two-dose series, unless the patient is immunocompromised (AAP, 2017). The immunization schedule is drafted by the ACIP and published through the CDC annually (CDC, 2016). Some organizations that support the current immunization schedules are the AAFP, AAP, and the ACOG (CDC, 2018c).

In the case of HPV immunization, research has strongly reflected that there is a poorly understood rationale for immunization uptake of Gardasil 9. Influencing factors that have been evaluated include knowledge of HPV infection, educational backgrounds of parents, exposure to complications from persistent HPV infection(s), and provider recommendation (Grabiel et al., 2013; Kester et al., 2013). The teaching project applied concepts from literature with practice validating importance of a strong presumptive recommendation as an influential factor in increasing Gardasil 9 uptake.

Advanced practicing nurses are called to promote population health through evidence-based synthesis and translation. According to the AACN, a DNP prepared nurse will focus their studies on a practice focused research application as part of the requirements to obtain a terminal degree (AACN, 2006). Educating providers on how to recommend HPV immunization in accordance to evidence-based practice guidelines

helped to standardize recommendations and lay the foundation for increasing immunization rates in youth (Clark et al.,2016; Dekker, 2006; Haelle, 2015). This project enhanced care delivery and population outcomes through the synthesis and translation of current research. Reducing infections and oncogenic mutations from persistent infections ultimately translates to improved population health and reduced health care expenditures both locally and nationally thus reducing the gap in practice.

Sources of Evidence

Existing literature about HPV immunization was extensively reviewed as well outlined within the power point and was used as the main educational piece I shared with attendees. The power point slides (see Appendix B) were available in print the day of the presentation to allow for providers to take notes and refer to the material and references. There was also vaccine related information from Merck such as the package insert and current education pieces for providers to reference about the vaccination use, safety, efficacy, and additional information that may be desired (see Appendix C). Despite these resources being provided from a local Merck vaccine representative, these resources were not provided to all attendees nor was the educational opportunity sponsored by or in conjunction with Merck.

Terms used to search included *HPV and human papillomavirus, Gardasil or Gardasil 9-valent or Gardasil 4-valent, parental hesitancy, provider recommendation, immunization and vaccination, opposition or hesitancy, health belief model, theory, mandate and legislation*. Articles searched were limited to articles published within the last 5 years and included both qualitative and quantitative studies exploring HPV

immunization. The evidence-based medicine pyramid, also known as the pyramid of nursing research hierarchy, was used to appraise the evidence by identifying high quality articles and identifying the highest quality literature recommendations in current practice. While appraising evidence that met criteria for inclusion, a large majority of qualitative data ranked significantly higher in the hierarchy of evidence, the quantitative data however tended to be of lower quality evidence. The quantitative data predominantly explored parental and provider rationales that were considered influential or discouraging in HPV immunization.

My practice question sought to explore the relationships that exists between a parents' perception of benefit of immunization and the provider's recommendation. Supporting a presumptive recommendation, helps to increase immunization rates while providing more efficient and visit focused care (AAP, 2017). Many medical societies have endorsed HPV immunization in adolescents. Societies such as the ACOG, AAFP, AAP, and ACS are governing bodies that help identify the evidence that is behind the recommendation for immunization and aid in addressing the practice focus question.

Applying current knowledge and understanding of HPV immunization to the teaching project helped clinicians to be better prepared in delivering the important message of cancer prevention. It also helped to ensure that the medical community is promoting lifelong population health. Enhancing provider knowledge not only allowed for more efficacious promotion of this immunization, it also helped them understand the impact of the lag in implementing this recommendation.

Appraisal of Evidence

I appraised the documents found during my research and categorized them based on the evidence-based medicine pyramid, also known as the pyramid of nursing research hierarchy. Systemic reviews and meta-analysis received highest rating of evidence-based practice followed by evidence syntheses, critically appraised evidence, randomized control trials, cohort studies, case reports, and expert opinion. The literature search resulted in 54 articles of which 36 were specifically applied using the EBM Pyramid. The appraisal revealed two systematic reviews, two meta-analysis, two randomized control trials, 22 cohort studies, five case-controlled studies, and one background article. Inclusion criteria included peer-reviewed articles published in the last 5 years and included the following search terms: *communication, discussion, approach, barriers, HPV or human papillomavirus, and parent, provider, or physician*. After articles were selected for review, they were evaluated for scientific rigor using the evidence-based pyramid. I then analyzed recommendations from qualifying articles and applied them to the educational in-service.

Evidence Generated for Doctoral Project.

The teaching project educated providers on how to recommend HPV immunization within the outpatient setting. Using the new patient education approach not only incorporated recommendations for a change in practice found within current literature, it also included theoretical underpinnings from the HBM.

The project team worked closely together through the completion of this project. I collected evidence-based recommendations and developed the teaching in-service.

Quantified evidence-based information was placed into a power point presentation and shared with the CMO. As part of the project team, the CMO critically appraised the information to ensure high-quality evidence-based recommendations were being translated to the attendees and into practice. The critiquing process helped to identify outliers and missing information, which was noted. The CMO provided permission for the educational project to occur within the healthcare system and approval from Walden University IRB for this project was attained. Once approvals were received, the in-service was placed on a schedule of monthly round table discussions.

Attending round table discussions is an administrative role of each provider in the institution. Providers from outpatient clinics from all specialties use this time to stay abreast of evidence-based recommendations and learn about community resources and networking solutions that align to enhance patient care within the network and the community. Therefore, their attendance is strongly encouraged and realized. Round table events occur every 4 weeks and offer providers enhanced knowledge and understanding of commonly incurred practice topics. Round table events are focused on reiterating evidence-based practice guidelines and sharing valuable resources to providers that aid them in enhanced care delivery. Some round table events also offer continuing education credits, though this is not always the case and was not be the case with this educational in-service.

Participants

The target audience for this education activity included providers practicing in primary care, pediatrics, obstetrics and women's health. During one of the regularly

scheduled monthly educational in-services providers were educated about information on how to standardize their recommendation for HPV immunization. Upon successfully educating providers on how to discuss HPV immunization with parents, immunization rates may increase to target goals set forth from ODPP. As a result, population health will be promoted, and HPV associated health care cost may be reduced.

Procedures

With project approval from Walden University's IRB and with approval and delivery date from the institution's CMO implementation of the doctoral project began. The educational activity followed Walden University's educational manual. I worked with the project team to complete and deliver the educational opportunity for providers to learn about evidence-based approaches to recommending Gardasil 9 immunization to their patients.

Once the date for the educational activity was scheduled, the administrative assistant and I used the hospital's email server to invite all practicing providers to the monthly round table to attend this single educational in-service. This nonrandomized approach aligned with the standard method of inviting providers to this routine event. While many providers do not achieve 100% attendance for the round table, it is part of their job description to attend at least 80% of these functions; therefore, turnout is a favorable method of disseminating important practice changing information to the group. Invitations for round table are also sent to independent physician/nurse practitioner practices that have hospital privileges. Students observing providers may also attend round table if it falls during their clinical rotation.

Some providers replied to the email, while the majority show up without a reservation as their daily operational schedules allow. Once the providers came to the scheduled round table, they were asked to sign in. Lunch was served, and the introduction of the presenter began. After introducing myself as the project team leader and presented, I advised all participants of their right to opt out of participation at any time. They were instructed on evidence-based practice recommendations for discussing HPV immunization with their patients. The presentation was delivered live using power point slides to reinforce educational objectives as outlined in Table 1. Power point slides were also available in print for participants to take notes on and refer to once they returned to their clinical setting. The presentation lasted for 60 minutes, the standard meeting time for the monthly round table, and allowed for questions at the end of the presentation.

Attendees were informed of the objectives of the presentation. Each objective sought to enhance provider knowledge and comfort of discussion of Gardasil immunization. The problem statement was delivered through discussion of looking at low HPV immunization rates at the institutional level, the state level, the national level, and the global level. The importance of the immunization was discussed focusing on key points that corresponded to the constructs of the HBM, as shown in Table 2. Providers learned about barriers that exists in discussing HPV immunization and learned about methods and approaches that will aid in countering resistance to the set recommendation. The literature review which was conducted prior to the educational intervention delivery graded recommendations using the evidence-based pyramid. A synopsis of the research gathered, evaluated, and graded was shared with attendees. This helped providers feel

comfortable in applying these practice-changing concepts at the bedside. Evidence that has been evaluated for scientific rigor with application of the levels of evidence pyramid was disseminated during the in-service. Information on how the pyramid ensures that only the highest quality recommendations from current literature was discussed and highlighted where each recommendation falls and was encouraged as a change in practice. The educational focus reiterated the importance of a strong recommendation by the provider as the single most influential factor to help promote immunization uptake. Teaching points for the educational in-service that align with the activity objectives and the HBM are reflected in Table 2.

Table 2

Educational Intervention Discussion Points

Objectives	Health Belief Model	Teaching Points	Emphasis
Current HPV Metrics	Perceived susceptibility	Prevalence rates	Cancer prevention
	Perceived severity	Frequency of infection	
		Complications	
Benefits of Immunization	Perceived benefits	Reduced morbidity and mortality.	Safety
		Reduce medical cost burden.	
Barriers to Immunization	Perceived barriers	Parental uncertainty, time since debut, safety, not necessary, lack of value, missed opportunity, age recommended	Cancer prevention
	Perceived susceptibility		Adolescent immunization
	Perceived severity		Safety
	Perceived benefits		Efficacy
Enhanced Knowledge	Perceived susceptibility	Prevalence	Cancer prevention
	Perceive severity	Frequency	Adolescent immunization
	Perceived benefits,	Persistent infection	Safety
	Perceived barriers,	Complications	Efficacy
	Cues to action	Cost	
	Self-efficacy	Use of CASE	
Improve vaccination rates	Cues to action	Prevalence	Cancer prevention
	Self-efficacy	Frequency	Adolescent immunization
		Persistent infection	Safety
		Complications	Efficacy
		Cost Use of CASE	

Each attendee was provided with a standardized assessment tool used by the hospital system to evaluate continuing education opportunities. Attendees were asked to evaluate the content delivered and determine if their knowledge base on the topic had increased and to evaluate if the learning objectives were met. The tool also evaluated the speaker's presentation style, which will be analyzed for the purpose of this project but not considered an important project outcome. Permission for use of the institution's standard continuing education evaluation tool was obtained. This instrument can be found in Appendix A. While the purpose of this project was to increase provider awareness and educate them on efficiently and scientifically recommending Gardasil 9 to their patients, providers who attended learned about evidence-based strategies on discussing HPV immunization that may help to enhance immunization rates with application. Future projects could evaluate the effectiveness of this educational in-service on practice.

The findings from the educational session have the potential to be applied in various settings where immunizations are provided. Through successfully educating providers, this project has the potential to increase immunization rates and serve as an improvement project model that can affordably and efficiently reduce health care expenditure and promote adolescent and young adult health. This project served to better understand alternative methods to increasing immunization rates outside of a state or school mandate.

Protections

A convenience sample of health care providers were invited to attend the educational session; however, attendance was affected by clinical and personal schedule

demands. Written consents to participate were not required for this educational in-service. There were no incentives afforded for project participation. Opening statements for the educational opportunity included a disclosure that the educational offering was an academic requirement for fulfillment of the project manager's doctoral degree in DNP program at Walden University. They were again informed of the project approval by the institution's CMO and the Walden University IRB. All participants were informed that at any time should desire to withdraw from the project before or during the in-service, they may do so. The evaluation tool has been kept confidential and participant names were not required. To further ensure confidentiality, there was no disclosure of the institution's name.

Following implementation of the project all evaluation tools were stored in a secured confidential location for the designated period of time per IRB criteria then destroyed. This project is not considered harmful to human subjects in any way as participants are being educated on current practice recommendations for adolescent immunization as supported by the CDC and ACIP.

Analysis and Synthesis

Improving healthcare does not mean that recommended evidence-based practice change is implemented without reviewing the literature, exploring the findings, and seeking to validate the proposed claims. In the educational project, evidence-based practice changes were promoted within the outpatient clinical setting within the context of existing literature recommendations. The project sought to enhance provider recommendations as an approach to validating similar studies exploring provider

recommendations and the influence on immunization uptake. The insights gained from this project further contribute to the existing knowledge of 9vHPV, as well as immunology in general.

The continuing education evaluation form was entered into the hospital systems' Survey Monkey to assist with analysis of the two data sets (appropriateness of the presentation and the standardized assessment tool- which evaluated the presentation). There are seven questions on the evaluation tool; responses for the first four questions were based on a Likert scale and responses for the last three questions were open-ended. Respondents were asked to grade the relevance of material, the quality of the speaker, the quality of handout(s), and their perception of increased preparedness on addressing the topic with patients following the educational opportunity using the likert scale with responses ranging from poor to excellent. Responses to open-ended questions helped me to identify consistent themes as they indicated what respondents liked the most and the least from the presentation. The final evaluation question asked about future programs and suggested a desired interest in additional information of the topic matter. Responses provided helped me to better understand if the participants increased their knowledge and found the information informative as well as important to practice.

Analysis Procedures

The data analyst assisted in reviewing and analyzing the data collected on the post educational program surveys. A data analysis system, Survey Monkey, was used to capture and analyze the data collected. Descriptive statistics were applied to analyze the results. Working together, the data analyst would have been able to assist the DNP

student in analyzing and synthesizing the project findings. This process provided the findings and implications of the educational project and helped to evaluate and recommend the need for future projects on HPV immunization. The data project findings and recommendations are further discussed in section 4.

Summary

Exploring the relationships between current immunization practices and guidelines for Gardasil 9 contributes to the current body of literature that seeks to understand the relationships between the two. While data trending reflects progress with HPV immunization, it is still far from desired vaccination goals set forth by Healthy People 2020. The goal of educating providers on methods of effectively promoting HPV immunization to the adolescent population was to improve population health and reduce wasteful spending. An educational project such as this not only identified current guidelines and recommendations, it also set the stage for future research projects around increasing HPV immunization in primary care. The educational project aligned with required learning objectives set forth by AACN that reflect doctoral scholarship. In section 4, findings from analysis of the educational activity and recommendations are discussed with a focus on limitations, outcomes, and implications for practice.

Section 4: Findings and Recommendations

Introduction

In Indiana, less than 10% of sixth graders have received immunization for HPV that matches ACIP guidelines (Indiana Department of State Health, n.d.). Nationally, HPV immunization target rates are set at 80% (ODPP, 2017); however, rates have been identified at roughly 40% (National HPV Vaccination Roundtable, n.d). There is much work to be done to increase immunization rates to the target goal. I sought to increase provider knowledge about holding conversations about Gardasil immunization in attempt to increase rates, thus addressing the current gap in practice. The practice question asked *Did an education opportunity rooted in evidence-based practice enhance providers' knowledge about how to have an effective conversation with adolescents and their parents about HPV immunization?* Through a lunch and learn educational presentation, I sought to educate providers on enhancing their understanding by incorporating constructs from the HBM and effectively applying them to discuss HPV immunization with patients.

Sources of Evidence

The presentation consisted of a power point that included evidence-based information that reflected upon the following: Healthy People 2020 goals, current immunization data for adolescents, the importance of immunization, recognized barriers and recommendations to overcome these barriers as supported in current literature. The HBM was used as the theoretical underpinning for the project. Providers were educated on how to align constructs from the HBM with identified barriers when applying the

model to clinical practice and patient education. Additional resources developed by Merck the manufacturer of 9vHPV were available to attendees. These resources included recently updated prescribing information for clinicians, and educational resource for patient education. Additional resources offered by entities other than Merck were also included to counteract bias. These resources were endorsed by the CDC, AAP, ACOG and AAFP. Each of these brochures, forms, letters, and pamphlets are available through the corresponding websites (CDC, AAP, and ACOG). These resources were selected as they reinforced the presentation's teaching points and supporting literature while also providing providers with nonbiased information pertinent to prescribing.

Findings and Implications

Following approval from the Walden IRB committee and the hospital's CMO, the educational project was drafted accordingly to comply with the educational manual at Walden University. The project team aided in scheduling the presentation as well as assisting in set up and project delivery. Providers that are employed by the hospital network and privileged at the hospital were invited to participate via email. Those in attendance were selected in a nonrandomized fashion, as daily operational schedules influenced attendance. There were 25 providers invited, with nine attending on the day of presentation. Of the nine participations in attendance, one participant had to leave during the presentation, resulting in eight completed continuing education evaluation tools. Two of the nine participants were late to the presentation but were easily brought up to speed as they had arrived after the introductory slides were delivered. They were advised of the project and their rights as participants.

Eighty-eight percent of the participants completed the continuing education evaluation tool following the presentation. The continuing education evaluation tool, which can be found in Appendix A, consists of seven questions. The first four questions are on a Likert scale with participants rating their response between one (poor) and five (excellent). The last three questions consist of open-ended questions, with inquiry about what the participant enjoyed the most and least about the presentation. The final question sought what topics are desired for future presentations. All data collected from the continuing education evaluation tool was entered into the hospital's Survey Monkey account for more detailed analysis. Question A, which asked about the practicality and relevance of the material found that all respondents felt that the information was excellent. Question B, asked about the quality of the speaker, all respondents felt the speaker was of excellent quality. Question C assessed the quality of the handout(s), which all respondents again rated as excellent. Question D sought to evaluate how well the program increased the participants knowledge on the topic. Eight of the nine participants rated this as excellent, with one participant rating this at a four out of five on the Likert scale or as very good. Figure 2 depicts the responses from the participants.

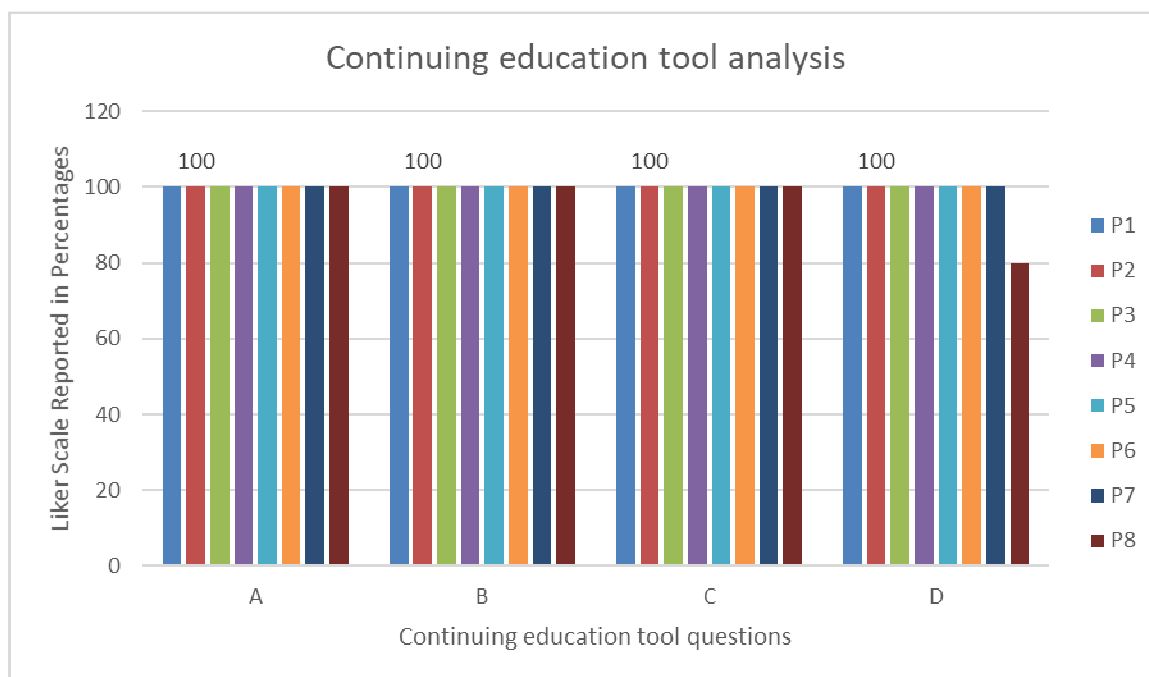


Figure 2. Continuing education evaluation tool responses on a Likert scale

Questions E, F, and G were open ended questions and therefore do not appear on the graph above. Instead these questions were analyzed for themes. Question E asked What did you like most about this program? The following themes were collected for E: speaker knowledge, presentation and style, evidence driven, practicality, and hard copy of presentation. Two of the eight participants responded to Question F: What did you like least about the program. Both commented on difficulty of visualization of slides. One participant answered Question G: What topics would you like the program to offer in the future, stating “Further investigate older adults who get the vaccine (ages 26-45). Do their bodies ‘take’ the vaccine well?” Despite being very nervous and even terrified of public speaking, I found that I had a very generous audience that applauded my public speaking abilities and offered encouragement for future speaking opportunities, some of

which even went as far as to comment on their continuing education evaluation tools outside of the standard response sections.

Unanticipated Limitations

The participant turnout rate was significantly less than anticipated, at 36%. Despite the lower than anticipated attendance, the attendance was greater than the average attendance rate for round table which is usually between 24-32%. Despite the small sample size, the enthusiasm of the audience may have had a positive impact on the participants and subsequently the data collected. The questions and discussions that occurred during and immediately following the presentation reflected the importance of this educational intervention and allowed for a more engaging and interactive discussions around HPV immunization. The data yielded not only supports that providers learned additional information on how to enhance their conversations about 9vHPV immunization in adolescents, the conversations and questions of the presented data reflected that providers learned new information. One hundred percent of the participants found the information relevant to clinical practice; speaking to the importance of this topic. Following the end of the presentation, all providers in attendance were openly discussing how they approach recommending HPV to their patient populations and all of them agreed that once a parent has vocalized that they are refusing the vaccine during the office visit, any additional mention of the vaccine or counseling does cause a change in the emotion and tone in the room. Many agreed that pushing the issue with parents, regardless of how gently it is done causes them to further withdraw and liked the ideas of how they could approach the discussion during other exam opportunities that might not

poise the same resistance. Providers found discussing HPV and its cancer preventing role during dental checks, pap smears, and physical exams to be a great way to educate their patient panels outside of adolescent visits. As the presentation focused on adolescent immunizations, one of the participants had questions about how to overcome parental opposition and the consequences of letting parents elect to vaccinate later. This question was poised prior to reaching that discussion point during the presentation, however this participant felt strongly that in their practice area adolescents are not becoming sexually active early in their teens and that data was not an accurate reflection of local trends. They were receptive that this was an average across the United States, but still felt that it likely was not harmful to postpone immunization until later in adolescents when declined at the target age range. It did seem that discussion of the immune response before the age of 15 seemed to better reflect the importance of recommending 9vHPV regardless of the age of sexual debut. Providers then questioned if the immune response is better at 9 and 10 years of age, why wait until 11 or 12 years of age to give the immunization. This did spark conversation among participants following the closure of the presentation, where others discussed approaches they have used and heard discussed in other venues, such as Focus on the Family, a Christian-based podcast. Some of the participants held onto the idea that they did not believe sexual debut was as early as 14 years of age locally, while others appreciated that defining sexual activity is difficult and hence getting an accurate reflection of debut poses yet another challenge. Furthermore, this discussion allowed for me to once again, emphasize that the focus of this vaccine really should be on its cancer prevention and not sexual transmission.

At the participating institution, there have been recent changes that have moved the vaccines for children (VFC) program out of each office and to a centralized office within the hospital. This change followed policy changes at the state level that directly impacted the network. This change unfolded after the institution agreed to allow for the educational project to be delivered to their providers but before the presentation was finalized for delivery.

Providers at the hospital were concerned that removing these immunizations from their office would allow for additional missed encounters for routine checkups and the process was modified so that VFC patients must be current on their well child or adolescent visit before presenting to the clinic for immunization. Providers therefore still see and provide counseling on the immunizations due during an office visit. Parents of a VFC eligible child or adolescent must take their child to a different clinic for immunization, allowing for fall out following an appointment with a provider at an offsite location as well as a parent or guardian changing their mind before the immunization is provided.

While participants working at the VFC identified clinic were invited to the round table, no one from that clinic presented on presentation day. This limitation not only affects individuals due for immunization, but also carries implications for the institution as a whole and extends into the community. Implications include lower than desired immunization rates in the organization and community, lost reimbursement for achieving metrics deemed as satisfactory to health and wellness promotion, and lastly inability to reduce preventable cancers in young adults. Those working at the VFC clinic may lack

knowledge of the evidence-based recommendations and fail to focus on the cancer preventing benefits of 9vHPV. Once the parent arrives at the clinic, they may ask additional questions and the individual providing the immunization who has not been educated on effective strategies could alter the decision to vaccinate. Failing to increase 9vHPV immunization rates carries risk to the community from a public health stance. Given the percentage of adolescents that qualify for VFC immunizations, it is essential that the VFC clinic is aware of the current evidence-based recommendations. Providers being equipped in effectively discussing HPV also allows for parents to reconsider their choice between their primary care provider and reaching the VFC clinic. It is imperative that parents who are still heavily weighing the decision be counseled in the same evidence-based fashion.

This is important to mention as this new process may inhibit immunizations being provided in a timely fashion despite providers being for immunization the same day, as supported in the literature. Offering 9vHPV the same way and same day as other adolescent immunizations is an approach endorsed by the CDC and the AAP. This workflow change does not impact all of the adolescents entrusted to providers within this network as commercial patients still are counseled on immunization during their visit and often provided the recommended immunization(s) the same day before leaving the office.

Implications

Positive implications of this project include promoting social change by educating providers on how to discuss HPV immunization effectively in the primary care setting. While the presentation focused on evidence-based recommendations for immunization,

during discussion following the presentation providers shared ideas that they have found effective with their colleagues. Providers also learned about utilizing opportunities for routine visits (pap smears, dental complaints) to approach the importance of timely HPV immunization. Ideally, utilizing an evidence-based approach to discussion of 9vHPV will increase rates to target goals and reduce associated health care expenditures and improve public health.

Recommendations

Discussing HPV immunization effectively requires that the provider first understands what barriers exist and how to overcome those barriers. Providers in attendance learned that how the recommendation for HPV immunization is made matters, which has been supported by literature as the most crucial factor over and over. They learned that their recommendation was the single most effective strategy to increasing timely HPV immunization. They also learned how to refocus questions about HPV immunization and infection from sex to that of cancer and do so concisely and efficiently with little interruption in their standard approach for recommending immunizations. Approaches supported in evidence, including a presumptive recommendation and a presumptive recommendation using the sandwich technique were also discussed with the participants.

While the continuing education evaluation tool did not specifically assess key objectives, this was outlined as an objective during the opening of the educational intervention. Understanding why parents or guardians opposed the immunization allowed for discussion that addressed their concerns and also provided opportunity for providers

to validate the importance of the vaccination. By refocusing the conversation on cancer prevention and elaborating on why it is recommended in adolescents', as done during the presentation and immediately following, during discussion, providers could approach the conversation with confidence and enhanced parental receptivity. Providers learned that a presumptive recommendation is supported in literature as an effective means of recommending 9vHPV. However, they also learned that while using that technique they could build their recommendation on the constructs outlined in the HBM (susceptibility, severity, perceived benefits, perceived barriers, cues to action, and self-efficacy). Approaching conversations about HPV in this manner allowed providers to discuss the most important barriers in an evidence-based manner, which in turn addressed the current gap in practice.

The HPV Vaccine Toolkit (AAP, 2019) has many resources for providers with a desire to increase HPV immunization within their practice setting. The toolkit includes nicely compiled recommendations endorsed by various organizations and Merck and are supported within the context of this project. Another resource, which was made available and serves as a secondary resource was published by the CDC (2018c) and can be found in Appendix C. This infographic reflects the recommended immunization schedule for children as young as 7 years of age and adolescents up to 18 years of age. It also supports that while 9vHPV can be given at 9-10 years of age in "high risk" individuals, it can also be provided if desired by the parent at that age as well and is considered a 'catch up' immunization after 13 years of age.

Contribution of the Doctoral Project Team

Process

The project team was supportive throughout the project; however, team interactions and overall support were more limited than expected, which could have been due to the administrative duties of members and the independent scholarship role of the DNP student. The data analyst was pivotal in validating the benefit of a teaching intervention at this institution. He was able to analyze existing data and support the value of the project. The data analyst offered continued support of this independently created DNP project. The CMO approved the project, overall, and also provided feedback and final approval of the in-service prior to it being scheduled. Support staff was pivotal in scheduling the presentation and inviting providers. Together all team members supported the project development and helped in facilitating the educational presentation. While the data analyst's assistance was limited in the post implementation phase, guidance was offered, and the DNP student was able to effectively analyze the data and resulting outcomes.

Plans

First and foremost, I plan to reach out to the pediatric office that is affiliated with the hospital network to introduce and possibly schedule time to present my project to their office personnel given that the VFC clinic is part of their clinic operations and that they may potentially serve the largest target population. I also plan to further disseminate my project findings at the local level, by applying to present my DNP project at the annual Coalition for Advanced Practicing Nurses of Indiana (CAPNI) meeting in the

spring and submitting to the Journal of Nurse Practitioners as part of their DNP project submissions.

Strength and Limitations of the Project

Strengths

Addressing HPV immunization is well supported as an important health objective. Strengths of this project included a thorough evaluation of the existing literature on HPV immunization, which supported the need for additional research given the limited numbers of systematic reviews and meta-analysis that exist on the topic. There is a need to build on the existing literature in order to develop more substantiating research projects that help better define how to overcome the barriers regarding HPV immunization. The presentation was developed using evidence-based practice recommendations from current literature on communication strategies on HPV immunization. Despite the small sample size, 100 percent of the participants found the material relative to their practice and nearly all felt that their preparedness on the topic was enhanced, further supporting the need for similar projects. The findings also suggest that delivery of this project in alternative venues such as in a dental office, health department, shot clinic, or school system may also result in enhanced knowledge of how to discuss HPV immunization effectively with parents of adolescents. With the newest recommendation to extend 9vHPV immunization to unvaccinated males and females up to the age of 45, this project could be replicated looking at the young adult population's immunization status to continue educating providers on how to recommend 9vHPV in the same or similar settings. Local, national, and global immunization rates that have been

inadequate are slowly improving population health in those whom are unable to get regular health screenings (CDC, 2013b). Retrospective studies have already begun to document decreased prevalence rates of the diseases associated with persistent HPV infections (CDC, 2013b). I found that despite my overwhelming anxiety of public speaking, participants found my presentation style to be engaging, which helped to boost my confidence in presenting my findings outside of the network.

Limitations

The small sample size was a limitation as well as a strength. Having a larger audience likely would not have suggested that everyone would have found the information to be relevant or enhanced their preparedness. However, having a smaller audience did allow for engaging conversations, which helped to further refocus and emphasize the importance of discussing this vaccination as one of cancer preventing. The networks decision to remove VFC from their clinics and locate it centrally also serves as a limitation of this project. Centrally relocating the VFC clinic occurred after the project development had started and the focus was to educate the outpatient clinic providers on how to effectively discuss HPV immunization. This limitation was further magnified by the absence of the clinicians from the VFC clinic during the scheduled round table.

Despite evidence-based practice recommendations to use a presumptive technique, I believe this communication tactic serves as a potential limitation. Communication that uses a presumptive recommendation with the sandwich technique, could be perceived as deceptive by parents. Parents who hear Tdap and Menactra but miss the recommendation for HPV tucked in the middle, may further develop mistrust

with their provider's recommendations for health maintenance. Though this technique has been validated as a successful strategy, I proposed that providers follow up the sandwich technique with mention of when the adolescent will need to return to complete the recommended series. Merck has funded many of the research articles that encourage application of the presumptive recommendation with the sandwich technique. Merck being the sole manufacturer of 9vHPV, funding a large majority of the existing literature, and encouraging concise communications through application of the CASE acronym also reflects their vested interest in the immunization and serves as a significant limitation. The CDC (2018d) and AAP (2017) simply encourage providers to use a presumptive recommendation, meaning that the recommendation for HPV be made just as they would recommend Tdap or Meningococcal immunization. The novelty of 9vHPV still causes parents to raise concerns about the safety and efficacy of the immunization. When questions arise, parents should be informed concisely about the benefits of HPV immunization surrounding cancer prevention (AAP, n.d.a; CDC, 2013a). The lack of systematic reviews and meta-analysis reflects a clear limitation in the current evidence, as overcoming the communication barriers has not yet clearly been reflected. There are many studies that are qualitative in nature and still exploring why 9vHPV has not been widely accepted and immunization rates have not reached the 80% target goal. There are very few quantitative studies that quantify the true and potential benefits of this immunization. This limitation also serves as a strength, supporting the premise of this project and the additional information that the project provides.

Recommendations

Recommendations for future scholarship include building upon this project and educating all providers and clinical staff within the healthcare system of the evidence, while analyzing data prior to and after and looking for increased immunization rates within the institution. Building on the current DNP project would add to the existing literature and help to validate the relevance and importance of HPV immunization, the very foundation of this project and bridge the gap in knowledge about HPV immunizations.

Section 5: Dissemination Plan

Following approval from Walden University, this manuscript will be published in ProQuest. Following fulfillment of the DNP program at Walden University, I plan to submit my manuscript to the *Journal of Nurse Practitioners* as part of their DNP publication initiative, as well as present my findings via a poster presentation at the local CAPNI conference or potentially brave a speaking presentation where I would share and educational opportunity with the conference attendees in a similar format as that of the educational presentation delivered in fulfillment of DNP requirements. It may also be effective for dentists to discuss the importance of HPV vaccination during their encounters, as this would focus on the cancer prevention aspects of 9vHPV. I therefore may even reach out to local dentist to see if they would like to learn more about this connection and see what opportunities I would have to share my evidence with their profession.

Analysis of Self

As I reflect on the journey of this project as a practitioner, I am amazed at the breadth and depth of knowledge I have gained about the topic of HPV immunization. Even my understanding of vaccines, their history, and their contribution to population health has expanded significantly. While I started this project seeking to complete the end goal of attaining a terminal degree in the field of nursing, I wanted to pursue a topic that I felt was important as a mother and scholar. What I have learned over the course of this program has changed my personal and professional opinions of the importance of vaccinations and their impacts on population health. As I encounter parents who are

skeptical about the safety and efficacy of the HPV vaccine, I am confident that I can listen to their concerns and competently educate them on why timely immunization is essential for all vaccines.

As a scholar, I have come to value the importance of a high-quality data driven study rooted in evidence. It is crucial to understand how data is displayed and what message(s) are being projected in research, so that low quality evidence does not dictate practice. While I faced challenges searching for and organizing literature, I also possessed new found strengths and the ability to critically evaluate the literature. The knowledge I have gained helps guide scholars such as myself in not hastily implementing low quality research into practice.

I have learned that scholarship is a dedication to lifelong learning that requires curiosity, knowledge, persistence, flexibility, and adaption even amidst challenges and fatigue. Working towards completion of my DNP reflects my commitment to lifelong learning and my profession. Even as I faced adversities throughout my DNP project, I held onto what lifelong scholarship means to me and today I have learned that each of those challenges has shaped me into the scholar I am today. As a project manager, I realized that I have the capability to identify a practice problem, address it with scholarship, and lead a project with purpose. I developed the DNP project based on a problem that I identified and am passionate about. I researched HPV immunization and infection extensively before creating a proposed solution to address the problem. I learned the value of working with a team. A team is needed in order to effectively address a practice problem. The members of the team aid in clearly identify the practice

problem, researching the topic, developing a solution, evaluating the process, and critically appraising the collected information before disseminating

Scholarship and evidence help to bridge the gap that exists between literature and practice and enhance patient care. I feel equipped in pursuing the scholarship role more actively in the future and have gained much insight regarding how to handle challenges and adversities that exists within the scholarship role. This project will serve as a reminder that all things worth pursuing pose their own independent challenges, yet with persistence and faith all things are possible. My future goals include challenging myself to publication of my research outside of my collegial experience. I also hope to present my research during the upcoming CAPNI conference in spring of 2020.

Completion

I faced many adversities over the course of my DNP Project. The first presented itself early on when my project was not feasible for the setting I was in or the project type. As the project took shape, I became overwhelmed with the amount of data I had collected and attempted to organize, yet I still lacked a feasible project to implement. As I closely worked with my chair, life happened and posed its own challenges. I struggled to secure a facility that would grant me permission to carry out my DNP project and I continued to struggle to define my project. After months of communication with my chair, my project finally started to develop and subsequently became a feasible project that I could implement, despite the fact that I would have to deliver an oral presentation to a group of providers with my relentless fear of public speaking. Just as my project developed and I found a network that agreed to allow me to implement and complete it, a

merger was announced and poised further delays to completion. I felt as if I was racing the calendar and losing ground quickly. As I continued to work towards implementation, the hospital system announced changes to their VFC program due to regulatory changes beyond their control. These changes, no doubt, also would ultimately impact my project outcomes. By the grace of God and with a timely IRB approval, I delivered my educational project at the last roundtable before the merger started to impact operations. Just weeks before my project implementation, my project team also unexpectedly changed; one of the team members accepted a job outside of the organization. My chair was crucial in assisting me as challenges presented reminding me that lifelong learning often is not without challenges or adversities. She calmly encouraged me to continue to persevere despite the challenges I faced and even encouraged me to rest as she sensed the fatigue and frustration.

Thankfully given all of these challenges, with the help of my DNP chair and committee and my project team members I successfully implemented, analyzed, and finalized the project. Each of these challenges paired with everyday life stressors further reinforced that scholarship is an outcome that requires persistence, flexibility, adaption, determination, and faith. Doctoral work was uniquely different from previous works completed at the undergraduate level; it required more stamina than I knew I had.

Summary

While HPV infection is thought to be a relatively benign infection given its asymptomatic nature and the body's ability to clear the infection, it has a lifetime prevalence of up to 100% and is attributed to 5% of the cancers worldwide. Immunizing

adolescents before sexual debut is crucial to reducing the prevalence of this virus but also the disease burden associated with persistent or high-risk infection.

Providers are essential in delivering the message about 9vHPV. Their recommendation matters more than any other factor influencing immunization. It is important to listen to the concerns our patients share, but it is equally important to equip them with the knowledge to make an informed decision for their health. While a presumptive recommendation for HPV is supported in the literature, we must overcome barriers that currently exists as we attempt to promote 9vHPV in adolescents.

Educating providers on how to effectively discuss HPV immunization within the primary care setting was perceived as beneficial and important to their ability to make a strong recommendation for 9vHPV. The continuing education program evaluation reflected that the information was perceived as relevant and helpful in increasing provider knowledge on the subject matter. A project such as this is not only easy to implement it is affordable and potentially carries great value to clinical outcomes. Increasing the sample size would have been beneficial in strengthening the project; however, the project still provided valuable insight and reflected that there is a significant need to refocus 9vHPV on cancer prevention versus sexual transmission even among providers.

Just as scholarly work requires effort and persistence, addressing inadequate immunization rates will also require effort and persistence from the nursing community. Providers need to be comfortable thinking of both conventional and unconventional approaches to help improve population health as well as looking to what evidence exists that can be built upon to strengthen the current problem. When discussing HPV

immunization with parents of adolescents, understanding that there is a great deal of information available to help validate their concerns as well as practitioner concerns is essential. As a team, we can increase rates towards the goal of 80% set forth by Healthy People 2020, which can improve population health and support the Walden the mission of social change.

References

- Advisory Committee on Immunization Practices (2018). 9vHPV vaccine for mid- adult persons (27-45yo) results from clinical studies. Retrieved from <https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2018-06/hpv-03-Luxembourg-508.pdf>.
- American Academy of Pediatrics (Producer). (2017). *American Academy of Pediatrics 2017 HPV Update*. Retrieved from <https://www.aap.org/en-us/Documents/Slides-AAP-2017-HPV-Vaccination-Update-Webinar.pdf>
- American Academy of Pediatrics (2019). HPV vaccine is cancer prevention. Champion toolkit. Retrieved from <https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/HPV-Champion-Toolkit/Pages/HPV-Champion-Toolkit.aspx>
- American Academy of Pediatrics (n.d.a). 5 reasons why the HPV vaccination is recommended for pre-teens. Retrieved from <https://www.aap.org/en-us/Documents/cervivor-HPV-vac-11-12.jpg>
- American Academy of Pediatrics (n.d.b). Vaccine hesitant parents. Retrieved from <https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunization>
- American Association College of Nursing. (2006). The essentials of doctoral education for advanced nursing practice. Retrieved from <http://www.aacn.nche.edu/publications/position/DNPEssentials.pdf>

American Cancer Society (2017, November). Take a shot at cancer! Get your child the

HPV vaccine to help prevent HPV cancers. Retrieved from

[https://www.aap.org/en-us/Documents/Parent-Handout_Take-a-Shot-at-](https://www.aap.org/en-us/Documents/Parent-Handout_Take-a-Shot-at-Cancer.pdf)

[Cancer.pdf](https://www.aap.org/en-us/Documents/Parent-Handout_Take-a-Shot-at-Cancer.pdf)

Arrossi, S., Temin, S., Garland, S., O'Neal Eckert, L., Bhatla, N., Castellsague, X., ...

Sanjose, S. D. (2017). Primary prevention of cervical cancer: American society of clinical oncology resource-stratified guideline. *Journal of Global Oncology*,

3(5),611-634.Doi: 10.1200/JGO.2016.008151Barraza, L., Weidenaar, K.,

Campous-Outcalt, D., & Yang, T.Y. (2016). Human papillomavirus and

mandatory immunization laws: What can we learn from early mandates. *Public*

Health Reports (131)5, 728-731. Doi: 10.1177/0033354916663184

Bartlett, J. A., & Peterson, J. A. (2011). The uptake of human papillomavirus (HPV)

vaccine among adolescent females in the United States: A review of the literature.

Journal of School Nursing, 6, 434-446. doi:10.1177/1059840511415861

Bigman, C. A., Cappella, J. N., & Hornik, R. C. (2010). Effective or ineffective: Attribute

framing and the human papillomavirus (HPV) vaccine. *Patient Education and*

Counseling, 81, Suppl, S70-76. Doi:10.1016/j.pec.2010.08.014

Brewer, N. T., Hall, M. E., Malo, T. L., Gilkey, M. B., Quinn, B., & Lathren, C. (2016).

Announcements versus conversations to improve HPV vaccination coverage: A

randomized trial. *Pediatrics*, 139(1), 1-11. Doi:10.1542/peds.2016-1764Brookes,

L., (2016). The HPV vaccine then and now. Retrieved from

<https://www.medscape.com/viewarticle/866591>.

- Bond, L., & Nolan, T. (2011). Making sense of perceptions of risk of diseases and vaccinations: a qualitative study combining models of health beliefs, decision-making and risk perception. *BMC Public Health, 11*(943). Doi:10.1186/1471-2458-11-943.
- Boyce, T. L., & Holmes, A. (2013, March). Persistence and partnerships: School nurses, inequalities and the HPV vaccination program. *British Journal of Nursing, 8*(2), 71-77. Doi: 10.12968/bjns.2013.8.2.71
- Cates, J. R., Ortiz, R., Shafer, A., Romocki, L.S., & Coyne- Beasley, T., (2012). Designing messages to motivate parents to get their preteenage sons vaccinated against human papillomavirus. *Perspectives on Sexual and Reproductive Health 44*(1), 39-47. Doi:10.1363/4403912.
- Centers for Disease Control and Prevention. (2013a). CDC Fact Sheet: Incidence, prevalence, and cost of sexually transmitted infections in the United States. Retrieved from <http://www.cdc.gov/std/stats/sti-estimates-fact-sheet-feb-2013.pdf>
- Centers for Disease Control and Prevention. (2013b). New study shows HPV vaccine helping lower HPV infection rates in teen girls. Retrieved from <http://www.cdc.gov/media/releases/2013/p0619-hpv-vaccinations.html>
- Centers for Disease Control and Prevention. (2016). Human papillomavirus (HPV) ACIP vaccine recommendations. Retrieved from <https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hpv.html>
- Centers for Disease Control and Prevention (2018a). HPV and oropharyngeal cancer. Retrieved from

https://www.cdc.gov/cancer/hpv/basic_info/hpv_oropharyngeal.htm

Centers for Disease Control and Prevention (2018b). Percentage of adolescents who are up to date on HPV vaccination. Retrieved from

<https://www.cdc.gov/hpv/infographics/vacc-coverage.jpg>

Centers for Disease Control and Prevention (2018c). Recommended immunization schedule for children and adolescents aged 18 years or younger, United States 2017. Retrieved from

<https://www.cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf>

Centers for Disease Control and Prevention (2018d). Talking to parents about HPV vaccine. Retrieved from <https://www.cdc.gov/hpv/hcp/for-hcp-tipsheet-hpv.pdf>

Cervarix: Human papillomavirus vaccine types 16 and 18 (Recombinant, ASO4 adjuvanted) Consumer Medicine Information. (n.d.). Retrieved from https://au.gsk.com/media/265100/cervarix_cmi_version_006.pdf

Chesson, H. W., Donatus, E. U., Mona, S., Meg, W., & Douglas, L. R. (2012). Estimates of the annual direct medical costs of the prevention and treatment of disease associated with human papillomavirus in the United States. *Vaccine*, *30* (42), 6016-6019. Doi:10.1016/j.vaccine.2012.07.056

Chesson H. W., Dunne E. F., Hariri S., & Markowitz L. E. (2014) The estimated lifetime probability of acquiring human papillomavirus in the United States. *Sexually Transmitted Diseases*, *41*(11), 660-664. Doi: 10.1097/OLQ.0000000000000193

Clark, S. J., Cowan, A. E., Filipp, S. L., Fisher, A. M., & Stokley, S. (2016). Parent

perception of provider interactions influences HPV vaccination status of adolescent females. *Clinical Pediatrics*, 55 (8), 701-706.

Doi:10.1177/0009922815610629

Daley, E. M., Vamous, C. A., Thompson, E. L., Zimet, G. D., Roseberger, Z., Merrell, L., & Kline, N.S. (2017). The feminization of HPV: How science, politics, economics, and gender norms shaped U.S. HPV vaccine implementation. *Papillomavirus Research* 3, 142-148. Doi: 10.1016/j.pvr.2017.04.004

Dekker, A.H. (2006). Fostering acceptance of human papillomavirus vaccines. *The Journal of the American Osteopathic Association* (106) 3 Suppl. 1, S14-18. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/16729556>.

Edwards, K.M., Hackell, J. M., The Committee on Infectious Diseases, & The Committee on Practice and Ambulatory Medicine, (2016). *Pediatrics* 138(3), e1-16. Doi:10.1542/peds.2016-2146.

Fardi, R., Zahra, A., Khan, K., & Idress, M. (2011). Oncogenic potential of Human Papillomavirus (HPV) and its relation with cervical cancer. *Virology Journal*, 8, article 269. Doi:10.1186/1743-422X-8-269.

Federal Interagency Forum on Child and Family Statistics. (2016). HC3.B Immunization: Percentage of adolescents ages 13–17 years vaccinated for selected diseases by poverty status and race and Hispanic origin, 2006–2015. Retrieved from <https://www.childstats.gov/americaschildren/tables/hc3b.asp>

Fontenot, H., Kornides, M., Mc-Ree, A., & Gilkey, M. (2018). Importance of a team-recommendation approach on HPV vaccine uptake. *Journal of Adolescent Health*,

62(2), S24. doi:10.1016/j.jadohealth.2017.11.048

- Gavi, the Vaccine Alliance, (2019). HPV vaccine inventor Ian Frazer sees his idea become a reality. Retrieved from <https://www.gavi.org/library/news/gavi-features/2012/hpv-vaccine-inventor-ian-frazer/>.
- Gilkey, M., Calo, W., Moss, J., Shah, P., Marciniack, M., & Brewer, N. (2016). Provider communication and HPV vaccination: The impact of recommendation quality. *Vaccine* 34(9), 1187-1192. Doi:10.1016/j.vaccine.2016.01.023.
- Grabiell, M., Reutzell, T. J., Wang, S., Rubin, R., Leung, V., Ordonez, A., ... Jordan, E. (2013). HPV and HPV vaccines: The knowledge levels, opinions, and behaviors of parents. *Journal of Community Health*, 38(6), 1015-1021. Doi:10.1007/s10900-013-9725-6
- Griffioen, A. M., Glynn, S., Mullins, T. K., Zimet, G., Rosenthal, S. L., Fortenberry, D., & Kahn, J. A., (2012). Perspectives on decision making about human papillomavirus vaccination among 11 to 12-year-old girls and their mothers. *Clinical Pediatrics* (51)6, 560-568. Doi:10.1177/0009922812443732.
- Glanz, K., Rimer, B., & Viswanath, K., (2008) *Health behavior and health education theory, research, and practice* (4th Edition). San Francisco, CA: Jossey-Bass.
- Haelle, T. (2015). Doctors, not parents, are the biggest obstacle to HPV vaccine. Retrieved from <http://www.npr.org/sections/health-shots/2015/10/22/450827102/doctors-not-parents-are-the-biggest-obstacle-to-the-hpv-vaccine>
- Harper, D.M., Vierthaler, S.L., (2011, November). Next generation cancer protection:

The bivalent HPV vaccine for females. *ISRN Obstetrics and Gynecology*. Doi: 10.5402/2011/457204

Health Belief Model. (2012). Retrieved from

http://currentnursing.com/nursing_theory/health_belief_model.html

Henry J. Kaiser Family Foundation (2018, October). The HPV vaccine: Access and use in the U.S. Retrieved from <https://www.kff.org/womens-health-policy/factsheet/the-hpv-vaccine-access-and-use-in-the-u-s/>

Hoeck, B., & Delmar, C. (2017, October). Theoretical development in the context of nursing- The hidden epistemology of nursing theory. Doi:10.1111/nup.12196 .

Indiana State Department of Health, (n.d). School immunization data. Retrieved from <https://secure.in.gov/isdh/26683.htm>

John P. Kotter Quotes. (n.d). allauthors.com. Retrieved from

<http://allauthor.com/quote/108862>

Katz, I., Bogart, L., Fu., Y., Cox, J., Samuels, R., Chase, T., Schubert, P., Schuster, M. (2016). Barriers to HPV immunization among Blacks and Latinos: A qualitative analysis of caregivers, adolescents, and providers. *BMC Public Health* 16, article 874. Doi:10.1186/s12889-016-3529-4

Kester, L.M., Zimet, GD., Fortenberry, JD., Kahn, JA., Shew, ML. (2013). A National study of HPV vaccination of adolescent girls: rates, predictors, and reasons for non-vaccination. *Maternal Child Health* 17(5), 879-885. Doi: 10.1007/S10995-012-1066-2

Kester, L. M., Shedd-Steele, R. B., Dotson-Roberts, C. A., Smith, J., & Zimet, G. D.

(2014). The effects of a brief educational intervention on human papillomavirus knowledge and intention to initiate HPV vaccination in 18-26-year-old young adults. *Gynecologic Oncology*, *132*, Suppl. 1, S9-S12.
do10.1016/j.ygyno.2013.12.033

Khurana, B., Montague, L., Wesimann, R. (2016). Statistical Review STN: 125508/153.

Retrieved from

<https://www.fda.gov/files/vaccines,%20blood%20&%20biologics/published/Statistical-Review---GARDASIL--9.pdf>

Kram, Y. A., Schmidt, T. H., Saghezchi, S., & Russell, M. D. (2015). Attitudes toward Human Papillomavirus vaccination and head and neck cancer prevention in a diverse, urban population. *Otolaryngology Head and Neck Surgery*, *135*(4), 538-543. Doi:10.1177/0194599815574821

Liddon, N., Michael, S. L., Dittus, P., & Markowitz, L. E. (2013). Maternal underestimation of child's sexual experience: Suggested implications for HPV vaccine uptake at recommended ages. *Journal of Adolescent Health*, *53*(5), 674-676. Doi:10.1016/j.jadohealth.2013.07.026

Lockwood-Rayermann, S., & McIntyre, S. J. (2009, August). Understanding HPV disease and prevention: a guide for school nurses. *Journal of School Nursing*, *25*(4), 261-269. Doi: 10.1177/1059840509333787

Lu, P., Yankey, D., Jeyarajah, J., O'Halloran, A., Elam-Evans, L. D., Smith, P. J., ... Dunne, E. F. (2015, October). HPV vaccination coverage of male adolescents in the United States. *Pediatrics*, *136*(5), 839-849. Doi:10.1542/peds.2015-1631

National Academy of Sciences (US), National Academy of Engineering (US), and Institute of Medicine (US) Panel on International Benchmarking of US Immunology Research. International Benchmarking of US Immunology Research. Washington (DC): National Academies Press (US); 1999. 1, INTRODUCTION. Available from:

[https://www.ncbi.nlm.nih.gov/books/NBK224031/National Cancer Institute \(2015, February\) HPV and Cancer](https://www.ncbi.nlm.nih.gov/books/NBK224031/National_Cancer_Institute_(2015,_February)_HPV_and_Cancer). Retrieved from <https://www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents/hpv-fact-sheet#r5>

National Cancer Institute. (2018). Human Papillomavirus (HPV) Vaccines. Retrieved from <https://www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents/hpv-vaccine-fact-sheet>

National Committee of Quality Assurance, (2018). Immunizations for adolescents. Retrieved from <https://www.ncqa.org/hedis/measures/immunizations-for-adolescents>.

Markowitz, L., (2018, June). Possible expanded age indication for 9 valent HPV vaccine through age 45 years: Considerations and ACIP HPV vaccines work group plans. Retrieved from <https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2018-06/hpv-04-Markowitz-508.pdf>.

Meites, E., Kempe, A., Markowitz, L.E. (2016, December). Use of a 2-dose schedule for human papillomavirus vaccination- Updated recommendations of the Advisory Committee on Immunization Practices. *Morbidity and Mortality Weekly Report*

65(49), 1405-1408. Retrieved from

<https://www.cdc.gov/mmwr/volumes/65/wr/mm6549a5.htm>

Merck Sharp & Dohme Corp. (2016). Make the CASE Helpful information for talking to parents about HPV vaccination [Supplemental material].

Metha, P., Sharma, M., Lee, R. (2013). Designing and evaluating a health belief model-based intervention to increase intent of HPV vaccination among college males. *International Quarterly of Community Health Education* 34(1), 101-117. Doi: 10.2190/IQ.34.1.h.

Morris, Z.S., Wooding, S., Grant, J. (2011). The answer is 17 years, what is the question: understanding time lags in translational research. *Journal of the Royal Society of Medicine* 104(12), 510-520. Doi: 10.1258/jrsm.2011.110180.

Mortensen, G.L., Adam, M., Idtaleb, L. (2015). Parental attitudes towards male human papillomavirus vaccination: a pan-European cross-sectional survey. *BMC Public Health* 15 article 264. Doi: 10.1186/s12889-015-1863-6.

Mulcahy, N. (2016). GSK's HPV vaccine Cervarix, no longer available in US. Retrieved from <http://www.medscape.com/viewarticle/870853>

Office of Disease Prevention and Health Promotion. (2017). About healthy people. Retrieved from <https://www.healthypeople.gov/2020/About-Healthy-People>

Opel, D., Heritage, J., Taylor, J., Mangione-Smith, R., Salas, H., De Vere, V., Zhou, C., and Robinson, J.D. (2013, September). The architecture of provider-parent vaccine discussions at health supervision visits. *Pediatrics* (132)6. Doi: 10.1542/peds.2013-2037.

- Opel, D. J., Mangione-Smith, R., Robinson, J. D., Heritage, J., DeVere, V., Salas, H. S., ... Taylor, J. (2015, October). The influence of provider communication behaviors on parental vaccine acceptance and visit experience. *American Journal of Public Health, 105*(10), 1998-2004. Doi: 10.2105/AJPH.2014.302425
- Perkins, R. (2017). Everything you and your patients should know about HPV vaccination. Retrieved from <http://mcaap.org/wp2013/wp-content/uploads/2017/10/2017-MIAP-Conference-Afternoon-Plenary-Perkins.pdf>
- Perkins, R. B., & Clark, J. A. (2013). Provider's perceptions of parental concerns about HPV Vaccination. *Journal for Health Care for the Poor and Underserved, 24*(2), 828-839. Doi: 10.1353/hpu.2013.0080
- Reagan-Steiner, S., Yankey, D., Jeyarajah, J., Elam- Evans, LD., Singleton, JA., Curtis, CR., MacNeil, J., Markowitz, LE., Stokley, S. (2015). National, regional, state, and selected local area vaccination coverage among adolescents aged 13-17 Years—United States, 2014. *Morbidity Mortality Weekly Report 64* (29), 784-792. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/26225476>
- Roberts, J. R., Thompson, D., Rogacki, B., Hale, J. J., Jacobson, R. M., Opel, D. J., & Darden, P. M. (2015, February 7). Vaccine hesitancy among parents of adolescents and its association with vaccine uptake. *Vaccine, 33*(14), 1748-1755. Doi:10.1016/j.vaccine.2015.01.068
- Shanmugasundaram, S., You, J. (2017). Targeting persistent human papillomavirus infection. *Viruses (9)* 8, 229. Doi: 10.3390/v9080z29
- Todd, N. (2017, April). What is HPV? Retrieved from <https://www.webmd.com/sexual->

conditions/hpv-genital-warts/hpv-virus-information-about-human-papillomavirus#2.

- Turner, L., Hunt, S., Diberezzo, R., Jones, C. (n.d.). Design and implementation of an osteoporosis prevention program using the health belief model. Retrieved from www.jblearning.com/samples/0763743836/chapter%204.pdf.
- Todorova, I., Alexandrova-Karamanova, A., Panayotova, Y., Dimitrova, E., & Kotzeva, T. (2014). Managing uncertainty: Healthcare professionals' meanings regarding the HPV vaccine. *Internal Journal of Behavioral Medicine, 21*(1), 29-36.
Doi:10.1007/s12529-013-9343-9
- Warner, E., Ding, Q., Pappas, L., Bodson, J., Fowler, B., Mooney, R., Kirchhoff, A., Kepka, D. (2017). Health care providers knowledge of HPV vaccination barriers and strategies in a state with low HPV vaccine receipt: Mixed-methods study. *Journal of Medical Internet Research (3)2*. Doi:10.2196/cancer.7345
- Wong, C.A., Taylor, J.A., Wright, J.A, Opel, D.J., Katzenellenburg, R.A. (2013, May). Missed opportunities for adolescent immunization, 2006-2011. *Journal of Adolescent Health 53*(4), 492-497. Doi10.1016/j.jadohealth.2013.05.009
- Zangger Eby, A. (2017, January- February). Impacting parental vaccine decision-making. *Pediatric Nursing, 43*(1), 22-34.
- Ziarnowski, K. L., Brewer, N. T., Weber, B. (2009). Present choices, future outcomes: Anticipated regret and HPV vaccination. *Preventive Medicine 48*(5), 411-414.
Doi: 10.1016/j.ypmed.2008.10.006.

Appendix A: Continuing Education Evaluation Tool

Please rate the following to help in the development and improvement of CME programs.

		<u>Poor</u>		<u>Good</u>		<u>Excellent</u>
A:	Practicality/relevance of material	1	2	3	4	5
B:	Quality of speaker	1	2	3	4	5
C:	Quality of handout	1	2	3	4	5
D:	How well did this program increase your preparedness on the topic?	1	2	3	4	5
E:	What did you like <u>most</u> about this program?					
F:	What did you like <u>least</u> about this program?					
G:	What topics would you like the program to offer in the future?					

Addressing HPV Immunization in Primary Care

An Evidence Based Initiative in fulfillment of doctoral requirements
for graduation from Walden University

Natasha Subramaniam, MSN APRN FNP-C

Disclosures

Approval has been granted for this project from the Institution and
College IRB

Your participation is optional and you may leave or opt out at any
time during this pre

Objectives

- Look at current HPV metrics in relation to Healthy People 2020 goal for HPV immunization
- Benefits of immunization
- Understand barriers to Gardasil 9 valent immunization and how to overcome each when discussing immunization with parents/patients.
- Apply theoretical underpinnings from the Health Belief Model (HBM) to enhance understanding of evidence based conversational approach that is being discussed and encouraged by the CDC and AAP.
- Enhance knowledge about holding evidence-based conversations with patients about Gardasil 9 valent immunization.
- Improve vaccination rates through application of recommendations.

Problem Statement

• Institutional Level

- 14% have started/ received Gardasil at our facility

• Local Level

- 9.2% of Indiana's 6th graders have received Gardasil immunization that matches ACIP guidelines
- Indiana is one of seven states with immunization rates <50% (CDC, 2018b).

• National Level

- 37.6% females and 13.9% of males received full series in 2013 (Roberts et al., 2015)
- Half of adolescents started Gardasil series in 2016 (Perkins, 2017)

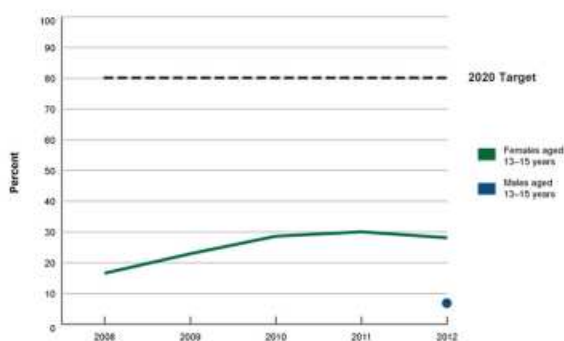
Healthy People 2020 Goals

Target immunization rate for Gardasil is 80% (ODPP, 2017)

Global rates are higher than US rates with 49.3% receiving immunization series compared to 44.9%

<https://www.healthypeople.gov/2020/data/disparities/detail/Chart/4657/8.1/2016>

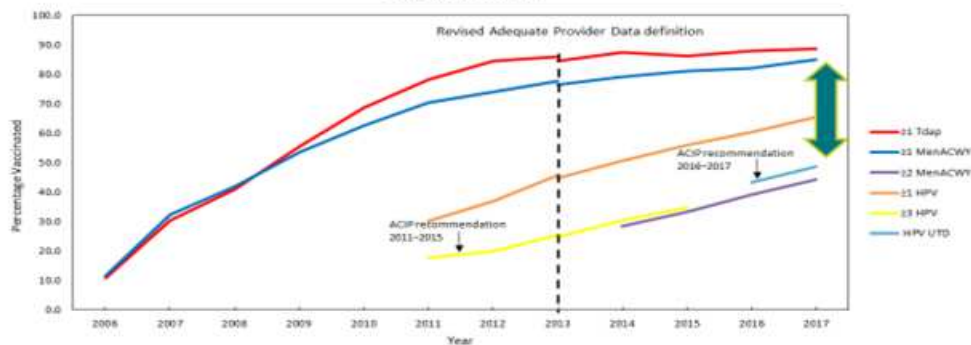
HPV Vaccination, Adolescents 2008-2012



SOURCE: National Immunization Survey - Teen (NIS-Teen), CDC/NCIRD and CDC/NCHS.

Adolescent Vaccination Coverage United States, 2006-2017

FIGURE. Estimated coverage with selected vaccines and doses* among adolescents aged 13-17 years, by survey year and ACIP recommendations[†] — National Immunization Survey-Teen, United States, 2006-2017[§]



Abbreviations: ACIP = Advisory Committee on Immunization Practices; HPV = human papillomavirus; MenACWY = quadrivalent meningococcal conjugate vaccine; Tdap = tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine; UTD = up to date.
 * 21 dose Tdap at or after age 12 years; 23 dose MenACWY or meningitis (2010) or tetanus/diphtheria vaccine; 23 dose MenACWY or meningitis/tetanus/diphtheria vaccine; 21 dose ACIP recommendation for HPV vaccination (2011) or 23 dose ACIP recommendation for HPV vaccination (2016).
 † ACIP recommendation for HPV vaccination (2011-2015) or 23 dose ACIP recommendation for HPV vaccination (2016-2017).
 ‡ ACIP recommendation for HPV vaccination (2011-2015) or 23 dose ACIP recommendation for HPV vaccination (2016-2017).
 § Data are based on the 2006-2017 survey years. Coverage for all adolescents whose measures were taken after that year. HPV UTD includes those with 21 doses and those with 23 doses before the 23-dose survey. Three states are 23-dose vaccinated for adolescents including the period between the ages of 13 and 19 years. Because of the change in recommendation, the graph includes data for 23-dose HPV from 2011 to 2015, and the HPV UTD estimate for 2016 and 2017. See also HPV vaccination recommendations for boys in 2011 coverage for all adolescents whose measures were taken before that year.
 ¶ 23-dose HPV vaccination is recommended for adolescents aged 11-12 years in 2014, and coverage was applied to the revised APO definition in 2013 data. Estimates using different APO definitions may not be directly comparable.

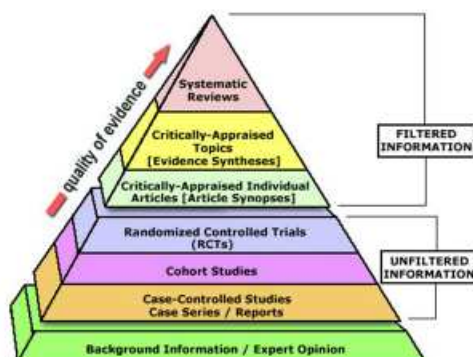


Source: National HPV Vaccination Roundtable, n.d.

Why Immunization Matters

- Most common STI in US (Grabiel et al., 2013)
- Lifetime prevalence 79-100%
- Persistent HPV infection carries oncogenic risk ((Faridi, R., Zahara,A., Khan,K., Idress, M., 2011)
 - Oral/ pharyngeal cancers
 - Cervical
 - Vaginal
 - Rectal/ Anal
 - Penile
- [AAP Cancer Prevention](#)
- The cost burden of HPV infection is thought to be second highest to that of Human immunodeficiency virus (HIV) (CDC, 2013a)
- Promotes Herd Immunity in those who cannot receive immunization

Evidence Based Pyramid of Research



Barriers

- ‘The vaccine will increase promiscuity in my child.’
- ‘The vaccine hasn’t been out long enough.’
- ‘I heard it isn’t safe.’
- ‘My child isn’t sexually active.’
- It’s not mandated for school.
- The value of the vaccine is not well identified among the medical community and parents alike.
- Recommended age to give aligns with a time in adolescent development where adolescents are not presenting for routine well visits = missed opportunities.
- Providers are hesitant to recommend vaccine due to concern of parental receptivity and lack of familiarity with how to present vaccine without emphasizing on sex.

Countering Barriers

- ‘The vaccine will increase promiscuity in my child.’
- ‘The vaccine hasn’t been out long enough.’
- ‘I heard it isn’t safe.’
- ‘My child isn’t sexually active.’
- It’s not mandated for school.
- The value of the vaccine is not well identified among the medical community and parents alike.
- Recommended age to give aligns with a time in adolescent development where adolescents are not presenting for routine well visits = missed opportunities.
- Providers are hesitant to recommend vaccine due to concern of parental receptivity and lack of familiarity with how to present vaccine without emphasizing on sex.
- Discussing HPV vaccination does NOT promote promiscuity
- HPV immunization has been out for 12 years in the US
- There have been no valid claims that that vaccine is not safe since its release.
- The vaccine is most effective before ANY sexual activity
- Benefits of vaccine/ awareness of benefits only now emerging (Cervical cancer 2/3 reduction with target immunization)
- Can give any time – even during sick visit, sports physical, etc. starting at age 9
- While some parents are still resistant to the recommendation, young adults are receptive. You can also discuss the vaccine outside of adolescent visits (conducting paps, discussing oral health, well visits for other patients whom have young children or grand children and will help promote the vaccine outside of the office visit)

Health Belief Model

- **Perceived Susceptibility**
 - Concern for odds of contracting HPV over one's lifetime
- **Perceived Severity**
 - Concern for how threatening HPV infections are or how great the risk of complications is
- **Perceived Benefits**
 - Assessed value of immunization in regards to decreasing chance of developing HPV infection or complications
- **Perceived Barriers**
 - Concern for complications post immunization
- **Cues to Action**
 - Engaging readiness to act
- **Self Efficacy**
 - Viewing oneself as able to attain desired health through action

Resources to Overcome Barriers

- [CDC Provider How to Discuss HPV Vaccine](#)
- [AAP How we Know HPV Vaccination is Safe](#)
- [ACS Just the Facts Parent Information Sheet](#)
- [AAP Why Adolescent Immunization](#)
- [ACS/ Parent Infographic](#)
- [HPV Champion Toolkit](#)

CASE Acronym

Acronym	Definition	Health Belief Model Application
C	Cancer Preventing	Perceived susceptibility, perceived severity, perceived benefits.
A	Adolescent Immunization	Perceived susceptibility, perceived benefits, perceived barriers, cues to action.
S	Safe	Perceived susceptibility, perceived severity, perceived benefits, self-efficacy.
E	Effective	Cues to action, self- efficacy.

Making a Presumptive Recommendation

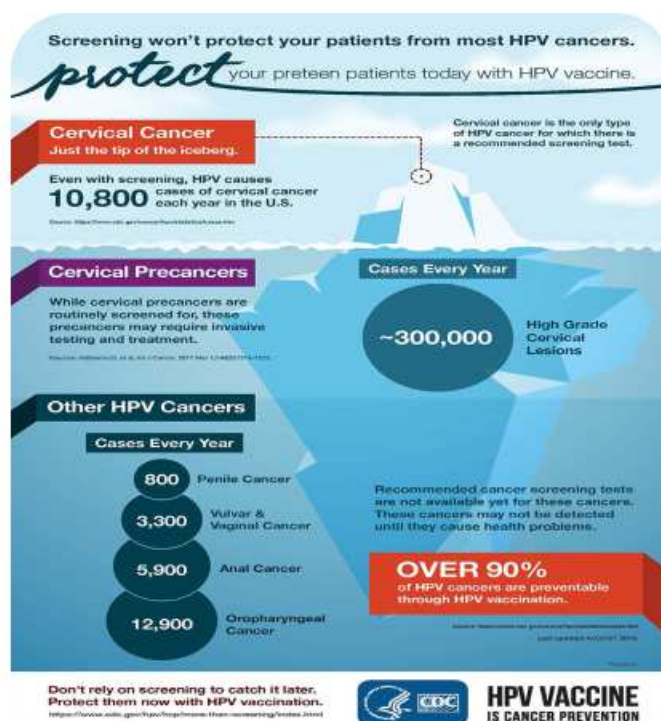
“Your child is due for ___ shots today. We will go ahead and get those ready for you while you wait for the doctor unless you have any questions.”

Allows for enhanced workflow, less effort when discussing immunization, and still keeps the opportunity open if a parent has questions about the immunization before it is given.

It can be incorporated into a work flow order if needed to ensure the order is not carried out by an unlicensed individual or in a patient with contraindications.

Assumes that the patient/ parent will want to move fourth with all recommended immunizations that are due. Does not prompt extensive conversation about specific details of each immunization.





When questions arise...How to respond effectively

- Why is HPV immunization so important for my child?
- Why does my child need the vaccine when they are so young? Or not yet sexually active?
- I heard the vaccine isn't safe and can cause _____.
- How do we know that it really works?
- It's a cancer preventing immunization
- The vaccine is recommended between 9-14 years of age and shows a heightened immune response that last longer when given earlier in life.
- The vaccine is very safe and has not been associated with any adverse outcomes since it was released.
- The vaccine is up to 99% effective in reducing various common cancers.

Your recommendation Matters!



Appendix C: Teaching Tools Provided for Providers During Inservice

Give a strong recommendation for HPV vaccine to increase uptake!

Dear Colleague:

The American Academy of Family Physicians (AAFP), American Academy of Pediatrics (AAP), American College of Obstetricians and Gynecologists (ACOG), American College of Physicians (ACP), the Centers for Disease Control and Prevention (CDC), and the Immunization Action Coalition (IAC) are asking you to urge your patients to get vaccinated against human papillomavirus (HPV).

HPV vaccine is cancer prevention. However, HPV vaccine is underutilized in our country, despite the overwhelming evidence of its safety and effectiveness. While vaccination rates continue to improve for the other adolescent vaccines, HPV vaccination rates have not. Missed opportunities data suggest that providers are not giving strong recommendations for HPV vaccine when patients are 11 or 12 years old. The healthcare provider recommendation is the single best predictor of vaccination. Recent studies show that a patient who receives a provider recommendation is 4—5 times more likely to receive the HPV vaccine.^{1,2}

What you say, and how you say it, matters. A half-hearted recommendation to a patient may not only result in the patient leaving your practice unvaccinated, but may lead the patient to believe that HPV vaccine is not as important as the other adolescent vaccines. The undersigned organizations hope that this letter, which provides key facts about HPV vaccine safety and effectiveness, will lead you to recommend HPV vaccination — firmly and strongly — to your patients. Your recommendation will reflect your commitment to prevent HPV-associated cancers and disease in the United States.

HPV-associated disease

- Approximately 79 million persons in the United States are infected with HPV, and approximately 14 million people in the United States will become newly infected with HPV each year.
 - Each year, an estimated 26,000 cancers are attributable to HPV; about 17,000 in women and 9,000 in men.
 - Cervical cancer is the most common HPV-associated cancer among women, and oropharyngeal cancers are the most common among men.
- Despite these statistics, the use of HPV vaccination to prevent HPV infection is limited and immunization rates remain low.

Prevention of HPV-associated disease by vaccination

- Two vaccines (bivalent/HPV2 and quadrivalent/HPV4) are available to protect against HPV 16 and 18, the types that cause most cervical and other anogenital cancers, as well as some oropharyngeal cancers.

INFORMATION FOR PARENTS 2019 Recommended Immunizations for Children 7–18 Years Old

Talk to your child's doctor or nurse about the vaccines recommended for their age.

	Flu Influenza	Tdap Tetanus, diphtheria, pertussis	HPV Human papillomavirus	Meningococcal		Pneumococcal	Hepatitis B	Hepatitis A	Polio	MMR Measles, mumps, rubella	Chickenpox Varicella
				MenACWY	MenB						
7-8 Years	Green	Orange		Green		Purple	Yellow	Purple	Yellow	Yellow	Yellow
9-10 Years	Green	Orange	Blue	Green	Purple	Purple	Yellow	Purple	Yellow	Yellow	Yellow
11-12 Years	Green	Orange	Blue	Green	Purple	Purple	Yellow	Purple	Yellow	Yellow	Yellow
13-15 Years	Green	Orange	Blue	Green	Purple	Purple	Yellow	Purple	Yellow	Yellow	Yellow
16-18 Years	Green	Orange	Blue	Green	Purple	Purple	Yellow	Purple	Yellow	Yellow	Yellow

More information:
 Everyone 6 months and older should get a flu vaccine every year.
 All 11- through 12-year olds should get one shot of Tdap.
 All 11- through 12-year olds should get a 2-dose series of HPV vaccine. A 3 shot series is needed for those with weakened immune systems and those who start their series at 15 years or older.
 All 11- through 12-year olds should get one shot of meningococcal conjugate (MenACWY). A booster shot is recommended at age 16.
 Teens 16-18 years old may be vaccinated with a meningococcal meningococcal (MenB) vaccine.

5 reasons why the HPV vaccination is recommended for pre-teens



#5

Better immunity

After receiving HPV vaccine pre-teens make more infection fighting antibodies than older teens. That is why they need only 2 doses of the vaccine are recommended at this age, instead of 3.

#4

More chances to vaccinate

Every visit on or after the 9th birthday is an opportunity to provide the vaccine.

#3

Low risk of exposure

HPV vaccine only works if the series is complete before a person is infected. Almost no 9-12 year olds have HPV.

#2

Long lasting

Current evidence shows that the HPV vaccination does not wear off!

#1

More effective

Early vaccination prevents substantially more pre-cancer than late vaccination.

cervivor
 informed. empowered. alive.
www.cervivor.org

This content was supported by the Grant or Cooperative Agreement Number, 5H23IP000952, funded by the Centers for Disease Control and Prevention. The content is solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the Department of Health and Human Services.

American Academy of Pediatrics
 DEDICATED TO THE HEALTH OF ALL CHILDREN™



The American College of
Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

Coding

Information on

HPV Vaccination

CPT Codes for Vaccine Administration

Code	Method	Route of Administration	Type of Service	Reporting Rules
90471	Injection	Percutaneous, intradermal, subcutaneous, or intramuscular	primary	Report only one primary vaccine administration per encounter.
+90472	Injection	Intradermal,	Percutaneous, subsequent vaccine administration.	Additional Report for secondary or subcutaneous, or Report only with code 90460, <u>intramuscular 90471</u> , or <u>90473</u> .
90460	Any route	Percutaneous, intradermal, administration per encounter. subcutaneous, or Physician or other qualified professional also provides counseling.	primary	Report only one primary vaccine administration per encounter. subcutaneous, or Physician or other qualified professional also provides counseling. Patient is 18 years or younger.
90461	Any route	Percutaneous, subcutaneous, or intramuscular	Additional	Report for each additional intradermal, administered in conjunction with 90460. Physician or other qualified health care professional also provides counseling. Patient is 18 years or younger.

HPV Vaccines Administered to Adolescents and Adults

Vaccine	Code for Vaccine Product	CPT Administration Code
HPV types 6, 11, 16, 18 (quadrivalent[4vHPV]), 3-dose schedule, intramuscular		
HPV types 16, 18 (bivalent [2vHPV]), 3-dose schedule, intramuscular	90650	90460-90472
HPV types 6, 11, 16, 18, 31, 33, 45, 52, 58 90649		90460-90472
(nonvalent [9vHPV] a-dose schedule, intramuscular	90651	90460-90472

Abbreviation: HPV, human papillomavirus.

This information is provided by the American College of Obstetricians and Gynecologists for educational purposes only. It is not intended to represent the only, or necessarily the best, coding format or method for the situations discussed, but rather as an approach, view, statement, or opinion that may be helpful to persons responsible for diagnosis and procedure coding. The statements made in this document should not be construed as the American College Of Obstetricians and

CDC Provider How to Discuss HPV Vaccines found at <https://www.cdc.gov/hpv/hcp/for-hcp-tipsheet-hpv.pdf>

Changing the Future: Preventing HPV Cancers found at <https://www.aap.org/en-us/Documents/COMP-ChangingTheFuture.pdf>

HPV Vaccines are Safe Here's How We Know found at https://www.aap.org/en-us/Documents/AAP_Fact_Sheet_Vaccine_Safety_LR.PDF

HPV Vaccination Just the Facts found at <https://www.aap.org/en-us/Documents/HPV-Vaccination-Just-the-Facts-for-Parents.pdf>

Take a Shot at Cancer found at https://www.aap.org/en-us/Documents/Parent-Handout_Take-a-Shot-at-Cancer.pdf

HPV is Cancer Prevention Toolkit found at <https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/HPV-Champion-Toolkit/Pages/The-National-HPV-Vaccination-Roundtable.aspx>