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## Provider Adherence to Recommendations for HPV Vaccination in a Family Practice and Pediatric Clinic

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# PROVIDER ADHERENCE TO RECOMMENDATIONS

DNP Final Project Report

Provider Adherence to Recommendations for HPV Vaccination  
in a Family Practice and Pediatric Clinic

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College of Nursing

Fall 2018

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### **Dedication**

I am dedicating the work of my DNP project to my family and friends who have supported me through this journey, especially my mother who is the strongest woman that I know, I could not have made it on this journey without your belief in me. Without their faith, encouragement, and motivation to endure this program I would not have accomplished this remarkable achievement. I thank you for your understanding, your patience and your willingness to stand beside me throughout the completion of this program.

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### Abstract

**Background:** The HPV vaccination has consistently had lower adherence rates than the goal set by Healthy People 2020. The Advisory Committee on Immunizations Practices (ACIP) now recommends that children (both male and female) 11 to 12 years of age should start to receive the HPV vaccine before exposure to the virus. However, even with the change in the new guidelines, the HPV vaccine administration rates still trail other adolescent vaccinations.

**Purpose:** The purpose of this project is to identify pediatric and family practice provider adherence to ACIP/CDC recommendations on HPV vaccinations in a Southeastern United States health system in pre-teens and adolescents from ages 11 to 18 years of age.

**Methods:** A retrospective chart review was performed and 100 charts were randomly selected from electronic health records from both a family practice and pediatric practice who were seen from January 1, 2017 through December 31, 2017

**Results:** There were no significant differences in HPV vaccination rates between the family and pediatric clinics, number of vaccination doses given, and provider adherence to ACIP/CDC guidelines. The only statistically significant difference was that the pediatric practice saw a younger patient population (SD 1.9) compared to the family practice (SD 2.4) ( $p=0.036$ ).

**Conclusion:** Even with similar comparisons on provider adherence, both the pediatric and family practice failed to obtain Healthy Peoples 2020 80% goal for HPV vaccinations. The pediatric practice was at 68.6 % while family practice was at 55.6%.

Keywords: HPV, HPV Vaccine, Adolescent, Pre-teen, STI, HPV prevention

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## Provider Adherence to Recommendations for HPV Vaccination in a Family Practice and Pediatric Clinic

### **Introduction**

The Human Papillomavirus (HPV) is a very common virus that affects, on average, 14 million people each year in the United States (US) and is spread through sexual contact with another person (Center of Disease Control and Prevention (CDC), 2015). Currently 80 million people, or approximately one in every four Americans, are infected with HPV, making it the most common sexually transmitted infection (STI) in the US (CDC, 2015). Although most HPV infections resolve spontaneously, some infections can lead to severe, life-threatening consequences. In addition, HPV infection can cause several different kinds of cancer, including: cervical (most common), vulvar, and vaginal cancer in women and penile cancer in men (CDC, 2015). HPV is also noted to cause anal and throat cancer as well as genital warts in both men and women (CDC, 2015). The HPV vaccine offers protection from the HPV virus, and aids in the protection from cancer caused from the virus itself (CDC, 2016). For women, routine screenings and pap smears are available to detect most cervical cancers; however, no screening is routine to detect cancers linked to HPV in men (HHS, 2016). These HPV related diseases can cause suffering, pain, surgical procedures, hospitalizations, and in worst case scenarios, death (Sussman et al., 2015).

### **Background**

Despite its strong clinical endorsement by the Advisory Committee on Immunizations Practices (ACIP), HPV immunization rates among adolescents is considerably less than that of other vaccines (Sussman et al., 2015). Sussman et. al (2015) demonstrates that preteen/adolescent vaccinations, such as Tdap and meningococcal vaccines, were above 80 %

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coverage yet only 60.4 % (65.1% for females; 56.0% for males), and 43.4% were up to date with the recommended HPV vaccination series (49.5% for females; 37.5% for males). In order to reach the Healthy People 2020 goal, HPV vaccination rates need to increase to achieve the 80th percentile (Healthy People 2020, 2017). It is important to note that despite the lower percentage of vaccination coverage compared to other vaccinations for this population, the vaccine has been proven to be effective. In just 4 years after it was recommended to the U.S. public in 2006, HPV infections in teenaged girls decreased by 56 % in 2010, with a corresponding decrease of HPV prevalence in women in their 20s (CDC, 2016). Nonetheless, nationally, 6 out of 10 teen aged girls have received at least one of the vaccines, while 5 out of 10 teen aged boys have received full HPV vaccination coverage (CDC, 2016). Kentucky (KY) is below the national average of HPV coverage for both boy and girls with less than 59 % of teenaged girls receiving one or more doses of the HPV vaccine and less than 39 % of teenaged boys receiving any form of the vaccine (CDC, 2016). If an 80 % rate of HPV vaccination is accomplished per the standards set by Healthy People 2020, 53,000 or more cases of cervical cancer or other cancers related to the virus could be prevented (Gable, Eder, Noonan, & Feemster, 2016).

The Advisory Committee on Immunizations Practices (ACIP) which provides advice and guidance to the CDC on the use of vaccines recommends that HPV vaccines be routinely administered to all children at the age 11 to 12 years of age (ACIP, 2016). The ACIP/CDC (2016) now recommends that children 11 to 12 years of age should be administered two vaccines 6 to 12 months apart. If an adolescent is older than 14 years or has certain immunocompromising conditions, a total of 3 courses of vaccines will need to be given (CDC, 2016). While HPV immunization is recommended prior to sexual activity, it is possible for young adult women to receive the vaccine up to age 26 and young adult males up to 22 years of age (HHS, 2016).

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Recently the American Cancer Society (ACS) recommended that the Gardasil 9 vaccine has been approved for women and men up to age 45, though not recommended after age 26 due to the lack of benefit in an older population (ACS, 2018). With the update the HPV vaccination guidelines along with provider adherence to CDC recommendations, cancers and other diseases caused by the virus can be prevented. The updated ACIP guidelines could provide room for improvement when it comes to HPV vaccination rates since the vaccination is scheduled to be given around the same time as other adolescent vaccinations, such as Tdap and meningococcal vaccination which currently have much higher vaccination rates than HPV. Another selling point with the newer HPV vaccination guidelines is if the patient gets the vaccination before the age of 15, it is only a series of two doses instead of three.

### **Purpose**

A systematic review of current research has shown that often times the single biggest indicator for a parent to choose to have their child immunized with the HPV vaccine is based on the recommendation of the provider (Scott & Batty, 2016; Shay et al., 2016; Sussman et al., 2015; Ylitalo, Lee, & Mehta, 2013). Determining rates in both a family and pediatric clinical setting can help determine if providers are adhering to the HPV vaccination guidelines set by the ACIP and provide insight if there are any variations on how the vaccine is administered in either a pediatric or family medicine setting.

The purpose of this project was to evaluate the adherence to ACIP/CDC recommendations on HPV vaccinations by providers in both a pediatric and a family practice setting in the Southeastern metro area. The primary objectives were to:

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- a. Evaluate the adherence of Community Medical Associates family medicine providers on HPV vaccinations for patient encounters from January 1, 2017 to December 31, 2017
- b. Evaluate the adherence of Children Medical Associates providers to on HPV vaccinations for patient encounters from January 1, 2017 to December 31, 2017
- c. Compare the adherence between family medical practice providers to pediatric practice providers on HPV vaccinations for patient encounters from January 1, 2017 to December 31, 2017.

### **Conceptual Framework**

Andersen's Behavioral Model was used to analyze why some people choose to vaccinate their children from HPV and why some choose not to have their child vaccinated. Andersen's Behavioral Model provides a framework for understanding how patient's beliefs/predisposed factors, as well environmental factors impact health behaviors and outcomes. This model implies that an individual's access and use of health services is a function of three characteristics: predisposing factors, enabling factors, and need (Andersen, 1995). Predisposing factors are socio-cultural characteristics of individuals that exist prior to their illness such as: race, education, age, gender, attitudes, values, and knowledge that people have concerning and towards the health care system, etc. Enabling factors are logistical aspects of obtaining care such as: access to health care services, income, health insurance, a regular source of travel, etc. Lastly, need is the most immediate cause of health service use, from functional and health problems that generate the need for health care services (Andersen, 1995). There are two types of needs which are: perceived need and evaluated need. Andersen (1995) states perceived need will better help to understand care-seeking and adherence to a medical regimen (such as immunizations), while

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evaluated need is related to the kind of treatment that will be provided after a patient has presented to a medical care provider with a problem/illness.

### **Methods**

#### **Design**

A descriptive study design was used to guide this retrospective chart audit to explore the level of provider adherence to ACIP/CDC HPV vaccination guidelines for pre-teen and adolescents.

#### **Sample**

The sample for this study was based on a retrospective review of patient immunization records at both the family practice clinic and pediatric clinic for the period January 1st, 2017 to December 31st, 2017. Inclusion criteria were patient electronic medical records (EMRs) for patients aged 11 to 18 years old; male or female genders, who were patients seen at either the family practice or pediatric practice within the time period. Exclusion criteria were female and male patients between the ages 11 to 18 years who had already completed the vaccination series before January 1, 2017 or who had contraindications to receiving the vaccine due to patient allergies. The sample contained all adolescent patients who received an office encounter with a provider at either clinical practice sites during the time period from January 1st to December 31st, 2017. The EMRs for the population of this study were at either Norton Community Medical Associates office or a Norton Children's Medical Associates office located in the Louisville metro office in a rural area.

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### **Informed consent**

With the study being a retrospective chart review, obtaining informed consent was not practical so a waiver of informed consent was approved via Institutional Review Board (IRB) and Healthcare Systems Research Office.

### **Data Collection**

The Health Systems Information Technology (IT) department randomly selected electronic health records of 100 patients 11 to 18 years old who were seen at a Community Medical Associates and 100 patients 11 to 18 years old who were seen at a Children's Medical Associates from January 1, 2017 through December 31, 2017 in the metro area. The primary investigator (PI) reviewed the records to determine the level of provider adherence to ACIP/CDC HPV vaccination guidelines. Data were collected on patient age and gender, type of clinic where patient was seen (pediatric or family practice), if HPV vaccine was administered, and the number of vaccine doses received. The electronic data collected were stored on a secured H-drive firewall protected research folder at Norton Healthcare.

### **Data Analysis**

Data analysis was conducted using IBM Statistical Software Analysis Package (SPSS). Descriptive statistics were used to summarize the demographic characteristics of the study sample from the chart review. Variations in vaccine rates based on demographic characteristics were examined. Major themes were explored such as if one clinic had higher HPV vaccination rates than the other or were similar and if parents/guardians are declining the HPV vaccination for their child.

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### Results

#### Sample characteristics

Of the 200 charts reviewed, 85 charts were excluded from the study. A total of 55 patients in the family practice were excluded from study since they had already received their HPV vaccination prior to January 1<sup>st</sup>, 2017. In the pediatric practice a total of 30 patients were excluded since their HPV vaccination had already been given prior to January 1, 2017. Neither the family nor pediatric practice had a patient excluded from the study due to contraindications/allergies to the HPV vaccine. The total sample size included 115 patients, 70 from the pediatric practice and 45 from the family practice. Of the total sample (Table 1) the average age of patients in the pediatric practice was 13.2 years (SD 1.9) and the average age of patients in the family clinic were older at 14.1 years (SD 2.4) ( $p = 0.036$ ). The family clinic saw an even split when it came to male and female patients, males were slightly higher at 51 % and females at 48.9 %. The pediatric practice saw more females at 58.6 % and the rest were males at 31.4%.

#### Vaccination Coverage

As seen in Table 1, the pediatric practice had a higher number of patients (68.6%) who received the vaccine compared to the family practice (56.6 %). Despite the difference in vaccination rates between the two clinics, it was not statistically significant ( $p= 0.157$ ). To assess the number of vaccinations received, 4 categories were divided to determine vaccination coverage between both practices: first dose, second dose, third dose, and zero for no vaccination given. When it came to the number of doses of vaccinations received, there were no significant differences between the two practices ( $p= 0.407$ ; Figure 2).

The ACIP/CDC guidelines indicate that a HPV series is complete when the patient has received all the recommended doses based on patient's age (2 doses before the age of 15, 3 doses

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for ages 15 or older). In the pediatric practice, 47.1% of the patients examined completed their full HPV vaccination series per standards set by the ACIP compared to the family practice that had a completion rate of 35.6%. Between the two practices (Table 1, Figure 3), there were more patients that did not complete their full vaccination series with the pediatric practice at 52.9% and the family practice at 64.4% still needing to complete their HPV vaccination series. There was no statistically significant difference between completion rates in the family and pediatric practice ( $p=0.220$ ).

### **Provider Adherence**

Provider adherence to HPV vaccinations was also examined using the health maintenance toolbar in the electronic medical record (EMR). The Health System uses EPIC as the electronic medical record (EMR) system. Immunizations or preventive screenings appear in a health maintenance toolbar at the top of the patient's EMR and will prompt the provider on what screenings and immunizations are needed based on the patient's age. Currently, one of the prompts in the health maintenance toolbar is the HPV vaccination series. During a patient encounter the physician can click on the health maintenance toolbar and it would indicate if and when the patient has received their HPV vaccination, along with the number of doses. This toolbar also provides an option for the patient/parent to decline the HPV vaccination. If the vaccination is declined, the provider will add "declined" in the HPV vaccination section of the health maintenance toolbar in the patient's EMR along with the date the vaccine was refused.

In the family clinic, the HPV vaccination was discussed 66.7 % of the time through the documentation of the vaccination in the Health Maintenance Toolbar in the electronic medical record (EMR) compared to 77.1 % of the time in the pediatric clinic. If the patient/guardian declined the vaccination, then the provider was still adhering to the HPV vaccination guidelines

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despite the vaccination not being received by the patient. Out of 70 patient's records reviewed in the pediatric practice, there were a total of 5 patients who declined the vaccination, compared to the family practice with a total of 7 patients who declined. There were no statistically significant differences in the rate at which providers addressed and were adherent to the HPV vaccination guidelines ( $p=0.217$ ).

The HPV vaccination is not a mandatory vaccination and patients/guardians have the right to refuse to vaccinate. In the study's family clinic setting, of those who did not receive the HPV vaccination, 73% of the time the provider did not address or document anything in the health maintenance toolbar. In the pediatric clinic setting, 65% of eligible patients in the sample did not receive the vaccine. The amount of use of the health maintenance toolbar in the family and pediatric setting did not reveal a statistical significance ( $p=0.586$ ). Neither practice was able to obtain the 80% goal set by Healthy People 2020 nor did the practices indicate a statistical difference between the use of the toolbar. (Figure 1.).

### **Discussion**

HPV vaccination rates have risen in the last decade, but more improvement is needed to meet goal rates set by Healthy People 2020. This study aimed to identify if there were any variations on vaccination rates or provider adherence to vaccination guidelines between a pediatric clinic and a family clinic. This study concluded there is no statistical difference on how providers are adhering to vaccination guidelines, the gender seen in the clinic, or the completion rate of the HPV vaccination series. The mean age of the patients in the pediatric practice was younger at 13.2 years old, compared the family practice with a mean age of 14.1 years old ( $p=0.036$ ).

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Provider recommendations play a huge role for parental decisions about HPV vaccinations. With the help of EMR prompting providers to ask about the HPV vaccination during the pre-teen/adolescent visit helps increase the rates for HPV vaccinations. This study revealed the importance of addressing the health maintenance toolbar in the EMR. Overall, providers in both family and pediatric practices equally demonstrated a high rate of use of the health maintenance toolbar when addressing the HPV vaccination during the patient's visit, with the pediatric practice even reaching 77.1%, almost at Healthy People 2020 80% goal set by the CDC. This study showed that when the HPV vaccination was not addressed in the health maintenance toolbar fewer patients received the vaccination. Of the 20 patients who did not receive the HPV vaccination in the family practice, 73% of the time the provider not address the vaccination in the EMR. Of the 22 patients who did not received the HPV vaccination in the pediatric practice, 65 % of the time the provider did not document discussion about the vaccination in the EMR. Despite the increase in vaccination rates over the years, there still are a high number of missed opportunities for HPV vaccinations.

This project also demonstrated that both practices had similar results to what is reported by the CDC, over half of adolescents (66%) aged 13 to 17 have received at least the first dose of the vaccination series and nearly 49 % of adolescents have received the full recommended doses to be completed with the HPV vaccination series (CDC, 2018). In 2017, there had been a 6 % increase of adolescents in the U.S. getting vaccinated for HPV from previous data from 2015. With the newer ACIP vaccination guidelines, EMR prompts, and putting the focus on providers to communicate the importance of the vaccination can help increase the initiation and completion rates for the HPV vaccine.

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### **Limitations**

This project had several limitations. The study was performed at a single pediatric primary care clinic and one family practice clinic, therefore the findings cannot be generalized to a larger population. The time constraints of the study limited data collection. Only the patient's immunization records and health maintenance toolbar were used to assess provider adherence. Due to the scope of this study, no education of the vaccination was reviewed and no reasons for the patient/guardian declining the vaccination reasons were reviewed. Also, chart review was performed randomly so that it was not determined whether it was an acute visit or a preventive visit. Acute visits are shorter visits and generally only focused on one problem where preventive well child visits are a longer office visit with the primary focus on prevention, such as: health screenings and immunizations. Since this study's primary focus was on provider adherence, sample characteristics such as race and socioeconomic status were not examined. Lastly, due the nature of this study being a retrospective chart review, there was no way to ensure that patient information was entered the EMR correctly or if there was omission of data.

### **Implications for Practice**

The literature shows how providers and provider recommendation play a critical role in parents/guardians choosing to get their child vaccinated against HPV (Scott & Batty, 2016; Shay et al., 2016; Sussman et al., 2015; Ylitalo, Lee, & Mehta, 2013;). When collecting the data for this study, the most missed opportunities for not getting patients vaccinated where when the health maintenance toolbar was not addressed by neither the provider nor someone in the medical staff. Patients and parents/guardians have the right to make their own decision on HPV vaccinations but

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asking about and providing education on the vaccine can increase vaccination rates or possibly compare to the rates of other adolescent vaccinations (such as Tdap and meningococcal vaccines).

These clinics should incorporate policy practice change where the medical team, along with the provider, will assess the EMR and immunization records on every patient encounter. Sussman et al. (2015) stated that most adolescent visits are usually episodic, which may provide difficulty when offering or educating about the vaccine. Despite the time constraint of an acute visit, it is still a patient encounter where immunizations can be reviewed and missed opportunities can be decreased. If the medical team, such as the medical assistant or nurse, assesses the patients' immunization records while getting the patient ready to be seen by the provider these missed opportunities can be decreased. Whether it is a preventive or an episodic visit for any patient who meets the HPV vaccination age requirement, the vaccination should be discussed prior to the encounter with the provider. Doing this will alert the provider if the HPV vaccination needs to be discussed prior to entering the patient room and could increase the adherence and increase HPV vaccination coverage. Once a system of collaboration like this is in place, it will become a part of a daily work routine, thus increasing vaccination rates.

The CDC (2018) provides insight to many different ways clinics and providers can increase HPV vaccination coverage. A potential strategy, and one that was highlighted in this study, was the use of vaccination prompts that are available through electronic health records (CDC, 2018). Martin et al. (2015) demonstrated that EMR alerts improved HPV vaccine initiation rates and completion rates tremendously compared to no prior previous prompts for the vaccination. With the national average of HPV vaccination series completion being only 49 %, the CDC (2018) also recommends scheduling appointments for the next dose before the patient leaves the clinic. The CDC also suggests that a vaccination card be given to the patient prior to leaving the office

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that state when to return for the next dose. Additional recommendations include investigating patient reminder systems such as: text messages, phone calls, or postcards to get a better understanding on what is the most effective strategy to increase series completion rates.

### **Implications for Further Study**

Data from this study showed that providers from both the pediatric clinical setting and the family practice clinical setting had no significant difference when it came to adhering to HPV vaccination guidelines. According to research there are many different interventions that have been successful increasing HPV vaccinations rates. With providers being such a key component in the decision-making process for most parents, barriers or obstacles providers face adhering to vaccination guidelines should be explored. By examining these barriers, interventions can be implemented to help overcome obstacles and improve adherence.

### **Conclusion**

The goal of this study was to evaluate provider adherence for HPV vaccination in in both a pediatric and family practice setting. While this study did not find any significant differences between the two practices, it did find that some work is still needed to reach Healthy People 2020's goal of 80 % HPV vaccination coverage. Provider adherence is critical when it comes to HPV vaccination rates. In this study, only 7.1 % of the patients in the pediatric practice declined the vaccination and only 15.6 % declined in the family practice. In this study, 73 % of the time in the family practice and 65 % of the time in the pediatric practice, there was no documentation of the discussion of HPV vaccination in the health maintenance toolbar. Perhaps more patients would have received the HPV vaccine if the provider had discussed it with them.

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The literature has shown parents trust provider's recommendations when it comes to immunizations and often is the biggest determinate when it comes to vaccinating their child. The notion of perceived need in Andersen's Health Behavioral Model implies that people view their own general health and seek the advice of medical professional's recommendations to help produce positive healthcare outcomes (Andersen, 1995). In this study, when providers addressed the need to the vaccination in the patient's EMR, the perceived need was to listen to the recommendation of the provider and get the HPV vaccination. Healthcare providers need to remember the influence they have on parents/guardians for obtaining HPV immunizations. HPV immunizations should be viewed as cancer prevention and providers should be recommending the HPV vaccination to their patients in the same manner that they would when recommending a mammogram or colonoscopy. Improving HPV immunization will lead to prevention of HPV related diseases, especially the prevention of cancer, and provide optimal patient outcomes.

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## PROVIDER ADHERENCE TO RECOMMENDATIONS

Table 1. Demographic and clinical comparison of Pediatric clinic and Family clinic patients

	Family (n =45) Mean (SD) or n (%)	Pediatric (n= 70) Mean (SD) or n (%)	p (sig <0.05)
Age (years)	14.1 (2.4)	13.2 (1.9)	0.036
Gender			
Male	23 (51%)	29 (41.4%)	0.31
Female	22 (48.9%)	41 (58.6%)	
HPV Vaccination			
Given	25 (55.6%)	48 (68.6%)	0.157
Yes	20 (44.4%)	22 (31.4%)	
No			
Number of HPV Vaccinations received	20 (44.4%)	22 (31.4%)	0.407
Zero	9 (20%)	14 (20%)	
First Dose	8 (17.8%)	21 (30%)	
Second Dose	8 (17.8%)	13 (18.6%)	
Third Dose			
HPV addressed by Provider in Health Maintenance (EMR)			
Yes	30 (66.7%)	54.1 (77.1%)	0.217
No	15 (33.3%)	16 (22.9%)	
HPV Series Completed	16 (35.6%)	33 (47.1%)	0.220
Yes	29 (64.4%)	32 (52.9%)	
No			
Vaccination Declined			
Yes	7 (15.6%)	5 (7.1%)	0.150
No	38 (84.4%)	65 (92.2%)	

## PROVIDER ADHERENCE TO RECOMMENDATIONS

Table 2. Frequency table on provider adherence clinical comparison

Adherence to HPV Guideline	Family (n= 45) n (%)	Pediatric (n= 70) n (%)
Yes	32 (71.1%)	54 (77.1%)
No	13 (28.9%)	16 (22.9%)

P value = 0.467

PROVIDER ADHERENCE TO RECOMMENDATIONS

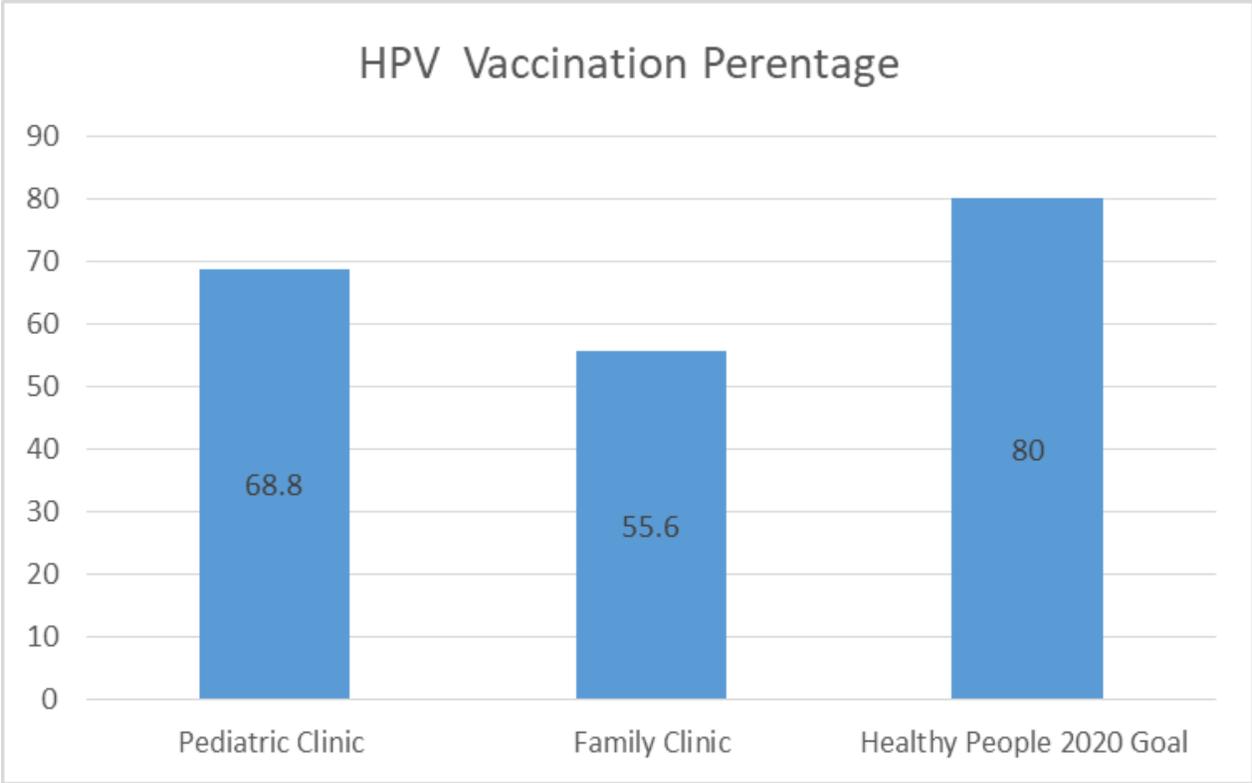


Figure 1. Percentage of patients who received the HPV vaccination in the pediatric clinic (68.6%) and the family practice (55.6%) compared to the goal set by the CDC.

PROVIDER ADHERENCE TO RECOMMENDATIONS

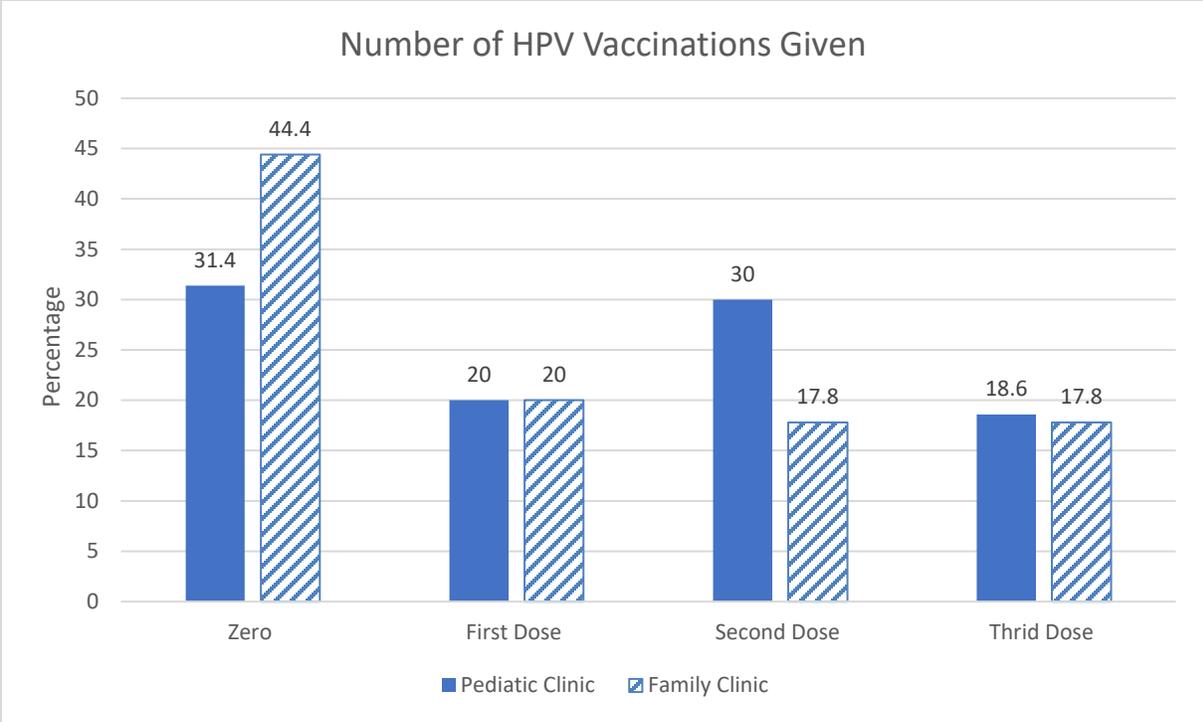


Figure 2. Percentage of number of HPV vaccinations given in both pediatric (n=70) and family clinic (n=45)

## PROVIDER ADHERENCE TO RECOMMENDATIONS

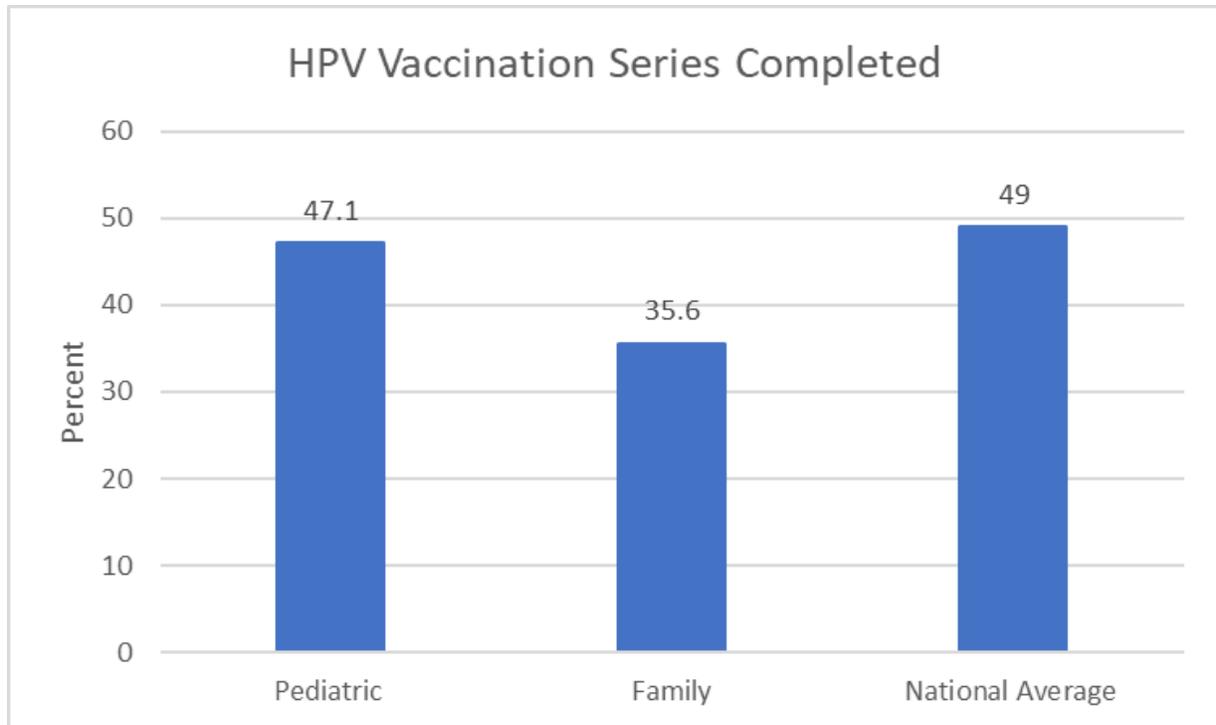


Figure 3. Percentage of HPV vaccination series completion set by ACIP/CDC guidelines in the pediatric (n=70) and family clinic (n=45)