Assessment of Health Literacy and Potential Barriers Regarding Acceptance of the Human Papillomavirus (HPV) Vaccine Among Parents/Guardians

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Human Papillomavirus (HPV) infection has been a rising concern due to its association with cervical cancer, but many parents are still not getting their children vaccinated to prevent this type of cancer. The purpose of the proposed research is to increase the uptake of the HPV vaccine by identifying the barriers preventing adolescents from receiving this vaccination, and increasing the literacy of parents/guardians about HPV and the HPV vaccine. To identify the aforementioned barriers, a questionnaire will be given to participating parents/guardians of children/adolescents visiting the Department of Pediatrics at UNT Health Science Center. This questionnaire was designed to aid in the assessment and discovery of the parent’s/guardians’ knowledge regarding HPV and the HPV vaccine, potential barriers to accepting the HPV vaccine for their children, and their attitudes towards the HPV vaccine and vaccination in general. Materials for this clinical research study have been completed, and IRB approval has been obtained, so data collection can begin. After completion of this research study, we expect to not only increase parents/guardians literacy regarding HPV and the HPV vaccine, but also to identify the major barriers preventing them from getting their child vaccinated. Information gained will provide a basis for developing a new health literacy intervention within the Department of Pediatrics at UNT Health Science Center.
ASSESSMENT OF HEALTH LITERACY AND POTENTIAL BARRIERS REGARDING THE ACCEPTANCE OF THE HUMAN PAPILLOMAVIRUS (HPV) VACCINE AMONG PARENTS/GUARDIANS

Brittany Vo-Le, B.S., M.S.

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ASSESSMENT OF HEALTH LITERACY AND POTENTIAL BARRIERS REGARDING THE
ACCEPTANCE OF THE HUMAN PAPILLOMAVIRUS (HPV) VACCINE
AMONG PARENTS/GUARDIANS

INTERNSHIP PRACTICUM REPORT

Presented to the Graduate Council of the
Graduate School of Biomedical Sciences
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in Partial Fulfillment of the Requirements

For the Degree of

MASTERS OF SCIENCE
IN
CLINICAL RESEARCH MANAGEMENT

By

Brittany Vo-Le, B.S., M.S.
Fort Worth, Texas
November 2015
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CHAPTER I.

INTRODUCTION

Human papillomavirus (HPV) is a DNA virus that contributes to the majority of sexually transmitted disease and is the major cause of cervical cancer (1). In the U.S. alone, roughly 14 million people are infected with HPV annually, half of which are aged 15-24 years (2). The prevalence of HPV is highest among females aged 20-24 years (3). More than 50% of women during their college years acquire the HPV infection within 2 years of their first sexual activity (4, 5). Due to this growing epidemic, the FDA first approved the HPV vaccines for administration in 2006; however, the prevalence of HPV and cervical cancer are still increasing (4). As HPV is a major cause of cervical cancer (1), scientists and healthcare providers have been investigating the reasoning surrounding the refusal of the HPV vaccination among parents (3). In 2009, only an estimated 27% of female adolescents aged 13 to 17 received the full 3-series immunization against HPV (6).

Human Papillomavirus Infection

HPV is primarily transmitted via genital contact. There are over 100 strains of HPV that have been identified and some have a higher risk of causing cancer than others (7). The majority of the strains of HPV produce subclinical infections, in which infected patients show no signs or
symptoms (7). Thus, the majority of people infected with HPV are unaware of their infection. Furthermore, the majority of the infections resolve naturally on their own (8). For those infected persons who do show symptoms, the symptoms are warts on the skin and/or genitals or cervical cancer (7). HPV types 16 and 18 have been associated with approximately 70% of women diagnosed with cervical cancer (9). HPV has also been implicated in oral/laryngeal cancer, anal cancer, and cancer of the sex organs (10, 11). Approximately 1 in 200,000 adolescents under the age of 18 are diagnosed with oral/laryngeal cancer, which is most commonly associated with HPV types 6 and 11 (12). In the U.S., approximately 4,000 individuals are diagnosed with anal cancer annually (12). Approximately 80% to 90% of those cases are caused by HPV types 16 and 18 (12). Furthermore, cervical cancer is classified as the second most common cancer in women worldwide with a prevalence of approximately half a million cases a year (13); approximately 300,000 of these cases are fatal (12).

**HPV and Cervical Cancer**

When an individual becomes infected with HPV, the viral DNA becomes integrated into the squamous epithelial cells of the infected area (14); epithelial cells line the inner and outer cavities of the body and the majority of organs. The most common sites of HPV infection are the surface of the vagina, anus, vulva, cervix, penis, mouth and throat. The epithelial cells then begin to replicate, and eventually small lesions called cervical intraepithelial neoplasia (CIN) will form (14). In most cases, these small lesions will spontaneously and naturally resolve. In a few cases, however, the small lesions persist, the cells will continue to replicate and the lesions will eventually become high-grade lesions i.e., a tumor (14). These cancerous cells can break apart from the cervical tumor and enter lymph vessels and/or blood vessels, allowing the spread of
tumors to other tissues in the body (8). There are four stages of cervical cancer and the stages are based on where the cancer is found (8). Stage 1 occurs when the cancer only resides in the cervix, stage 2 occurs when the cancer has spread to the upper part of the vagina, whereas stage 3 occurs when the cancer has further spread to the pelvic wall. Lastly, stage 4 occurs when the cancer has invaded the bladder/rectum or other areas such as the lungs (8). Some of the symptoms that accompany cervical cancer can include abnormal vaginal bleeding, increased vaginal discharge, pelvic pain, and/or pain during intercourse (8). Early stages of cervical cancer do not usually show any obvious signs or symptoms (8).

**Treatment of Cervical Cancer**

Although there are no known treatments for HPV infection, there are treatment options available to those diagnosed with cervical cancer depending on the stage, location, and size of the cancer. The treatments available are surgery, radiation therapy, chemotherapy or a combination of these methods (8). The option of surgical removal of the cancer is only available to those who are diagnosed with stage one or two (8). Additionally, depending on whether or not the woman has future plans to conceive children, two surgical procedures are available to them. These are a radical trachelectomy or a complete hysterectomy (8). In a radical trachelectomy, only the cervix, part of the vagina, and lymph nodes in the pelvis are removed, whereas in a complete hysterectomy, the entire cervix and uterus are removed (8). Radiation therapy consists of high beams of intense energy aimed to specifically kill the cancer cells. This option of treatment is available to women at any stage of cervical cancer (8). Lastly, chemotherapy is the use of chemicals/drugs to kill the cancer cells, introduced into the body either intravenously or orally. The use of chemotherapy, however, has a high risk of harming normal, non-cancerous
cells in other areas of the body. As the level of healthy blood cells decreases, the immune response is compromised and the individual is at increased risk of various infections (8). Other common side effects can include bruising and/or bleeding easily, weakness, fatigue, nausea, vomiting, diarrhea, and hair loss (8).

**Prevention of Cervical Cancer: Vaccines**

Due to the high prevalence of HPV and cervical cancer worldwide, three vaccines have been developed, targeted towards specific strains of HPV that have a high-risk for causing cervical cancer. The three vaccines that are currently available in protecting adolescents and young adults from HPV are Cervarix, Gardasil and Gardasil 9. Cervarix was the first bivalent vaccine (i.e., designed to be effective against two strains) developed to protect against HPV types 16 and 18. It is licensed and approved by the FDA for use in females ages 9 through 25 (10). Gardasil is a quadrivalent vaccine that aims to protect against HPV types 6, 11, 16 and 18. HPV types 6 and 11 were also included because they are known to be associated with genital warts and respiratory papillomatosis, a disease where tumor growth can occur anywhere along the respiratory tract (10). Lastly, Gardasil 9, a nine-valent vaccine, protects against the four HPV types mentioned previously as well as HPV types 31, 33, 45, 52 and 58, which are all oncogenic (cancer causing) (6). Gardasil and Gardasil 9 are licensed and approved by the FDA to be administered to both males and females between the ages of 9 and 26 years (10). In order for these vaccines to be most effective, adolescents must receive 3 doses; after the initial dose, the 2nd dose should be given within 2 months (15), and the 3rd dose should be administered 6 months after the 1st dose (15). The HPV vaccine is recommended for girls and boys at the age of 11 or 12 years but can be given to pre-adolescents as young as 9 years old (15). Receiving these series of
HPV vaccinations is crucial for preventing infection by HPV, as there is no current specific
treatment for HPV once an individual is infected (10). Additionally, the HPV vaccines, Cervarix
and Gardasil, have been proven to be nearly 100% effective in preventing cervical cancer (16).

Other Preventative Approaches for Cervical Cancer

Although the HPV vaccination is one of the best ways to prevent HPV and subsequent
cervical cancers, the most effective prevention is complete abstinence from any sexual activity
(1). Additionally, a previous study indicated that the consistent and correct use of condoms
reduced the risk for cervical cancer by 70% (9). Another important preventative measure is
cervical cancer screening or a Pap smear. The purpose of cervical cancer screening is to detect,
diagnose and treat the cancerous cells early enough before they can grow, spread, and infect
other areas of the body. It is strongly recommended that all females receive a Pap smear at the
age of 21 and once every 2 years after the initial screening (17). During a Pap smear, a sample of
cells is scraped from the cervix and analyzed for any abnormalities. If abnormalities are detected
at an early stage, the cells can either be removed or killed before they become cancerous. Two
other possible methods to examine cervical cells are via a cervical exam or a biopsy (8). A
cervical exam uses a colposcope, containing a magnifying lens, to further examine the tissue
directly on the cervix, whereas in a biopsy, the tissue is removed from the cervix before it is
examined (8). A biopsy is the most accurate method to diagnose whether cervical cancer is
present (8). Within three years of introducing a cervical cancer-screening program in new
populations, the risk of cervical cancer was reduced by 60% to 90% (18). The importance of
regular screening is highlighted by the findings that 50% of all women who are diagnosed with
cervical cancer did not have a history of screening prior to their diagnosis (12, 18). Recent
studies have suggested that the lack of regular screening is predominantly due to personal reasons, including fear, embarrassment, insufficient knowledge about the importance of screening and the technical aspects of the procedure, and inadequate time (12). Other factors that influence a woman’s decision not to receive screening include cultural and financial factors, including religious beliefs, age, lack of insurance, and geographic isolation with the resultant lack of health care providers to administer the screening (12).

**HPV Vaccines: Adverse Effects**

As there are currently no treatments available for individuals infected with HPV, the most effective prevention against HPV and HPV-related cancers, besides abstinence, is the HPV vaccine. Although these vaccines were only approved and introduced six years ago, the risk for this vaccine to cause serious injuries and/or death is rare (15). Several mild side effects associated with the administration of this vaccine include allergic reactions causing pain, redness and/or swelling of the face, lip, tongue and throat, and itching (15, 19). Some serious side effects associated with the HPV vaccine are severe stomach pain, swollen lymph glands, fever, chills and body aches (19). Although rare, it has also been reported to the Vaccine Adverse Events Reporting System (VAERS) that the HPV vaccine can cause an autoimmune reaction (20), where the body acts against its own tissues. Other side effects that have been reported to VAERS include fainting, pain at the site of the injection of the vaccine, and deep vein thrombosis or blood clotting (20). However, as VAERS is a passive reporting system, there is difficulty in confirming the main source of these reported side effects, and whether the side effects are directly associated with administration of the HPV vaccine or other factors associated with the environment e.g., fainting due to administration of the vaccine while standing versus seated (20).
Reasons for Refusing HPV Vaccination

Researchers have taken various approaches to understanding the reasons underlying a low HPV vaccination uptake rate. Some have investigated adolescents and their family’s personal view on vaccination, while others have sought to find an association between the patient’s trust in their physicians and past experiences with vaccinations (21,22). In a study conducted in Sweden, only 14% of parents who participated in the study believed that the HPV vaccination would not fully protect against cancer, which further influenced their decision to either not vaccinate their child and/or become unsure if they should vaccinate their child (23). Additionally, parents with daughters were more amenable to the HPV vaccine, and thus more likely to vaccinate than parents who had sons (23). This could be due the fact that approximately 50% of parents with sons are not sure if the HPV vaccine is necessary for boys, or whether the benefits outweigh the cost and potential side effects (23). Another study revealed that many mothers were concerned about the number of vaccines required for their child in a short time frame (22). These mothers did not want to add another vaccination to the list of required vaccinations for their child, especially one that is not required by schools (22). Hughes et al. conducted a study to investigate the interaction between parents, adolescent children and their physician and how this was associated with acceptance and receipt of the HPV vaccine (24). They concluded that when parents conveyed hesitancy about receiving the vaccination, physicians did not try to sway their decision with further discussion about the vaccine, and the adolescents deemed themselves as passive participants (24). Zimet et al. report that the most common reason (54.9%) for taking no additional action in regards to the HPV vaccine was due to fact that these individuals were either married or in a monogamous relationship (25). An
important factor leading to refusal of the HPV vaccine was financial concerns (25). For the 3-injection series of Gardasil, the estimated cost is $360, not including administrative costs (12), which is a burden for families who are not financially stable and/or lack medical insurance (7). The low levels of HPV vaccine uptake are also due to geographic isolation, and parent’s lack of awareness of where and when to receive this vaccination (7). Other studies have also shown that many parents rely on negative media and internet reports by non-experts, such as other parents and bloggers, as their main source for medical advice and information (26, 27). Both of these sources are generally unreliable and biased, and may not provide accurate medical information. Taken together, the results from these studies indicate that improving the health literacy about HPV and the HPV vaccine, and increasing availability of the vaccine, may increase the acceptability of the HPV vaccine in adolescents, and also increase the uptake of the vaccine.

Understanding the overall perception of vaccinations could also be the key in not only identifying the reason for low HPV vaccine uptake, but also identifying efficient methods and strategies for increasing the number of HPV vaccine recipients. In multiple studies, many parents have stated that they have felt pressured by their healthcare providers into vaccinating their child with little thought to each child’s individual needs (28, 29, 30). This feeling among some parents also contributes to their lack of trust in healthcare providers (29). Multiple studies have confirmed that many parents believe that their healthcare providers suggest vaccinations and other medical procedures for their own financial benefit rather than placing their patient’s wellbeing and individual needs first (29). Completely understanding the views of parents and the reasons behind their refusal of the HPV vaccine for their child is the key to increasing the HPV
vaccine uptake, which should ultimately reduce the rate of HPV and other related cancers such as cervical cancer.

Since 2008, the uptake rates of HPV vaccination have only increased by 7%, which is low despite the proven safety and efficacy of this vaccine (31). Certain measures can be taken to further increase the uptake of this vaccination in the target population. Research findings have shown that physicians advocacy for immunization is a strong determinant of the parents decision to vaccinate their children (31). In a recent study, less than half of physicians reported that they routinely recommend that their 11-12 year old patients get immunized (31). This finding suggests that more effort must be directed towards improving clinician awareness of HPV, and the potential benefits of vaccination (31). When physicians educated their patients through reassuring the safety and the benefits of the vaccine, and addressing individual parental concerns, parents were more willing to vaccinate their children (31).

In a survey conducted in Texas in 1997, approximately half of the parents who participated in the study agreed that schools should mandate HPV vaccination to not only ensure increased vaccination, but also decrease socioeconomic disparities in vaccination uptake (31). A major concern for mandating the HPV vaccination for school enrollment, however, was the ability for low-income families to afford the vaccination if it is not covered by insurance (31). Many physicians also reported that a major barrier in vaccine uptake was the lack of insurance coverage (31). To address this concern, programs are available to help cover the financial burden of HPV vaccination costs, including Vaccines For Children (VFC), a federally funded program that provides free vaccinations to children based on their family’s financial status (32). To be
eligible, children must be aged 19 or younger and are either Medicaid-eligible, uninsured, underinsured or American Indian or Alaska Native (32). In 2010, VFC was able to vaccinate approximately 40 million children (32). Informing parents of programs such as VFC will help relieve this financial burden.

Summary

Although we have a potential solution to protect against HPV infection and its related cancers, the main problem is getting sufficient numbers of children vaccinated. One of the underlying barriers to improve vaccination rates may be the lack of knowledge about HPV and the HPV vaccine. To increase HPV vaccination uptake, the public must become educated regarding the harmful consequences of HPV as well as the benefits and limited harm of the HPV vaccination. Many studies are either ongoing or underway to further understand the pathology of HPV as well as factors related to low HPV vaccination uptake.
CHAPTER II.

HYPOTHESIS/ SPECIFIC AIMS

One of the major health epidemics that women face today is HPV, a key contributing factor in the development of cervical cancer. HPV is the most common sexually transmitted infection (11). In the United States alone, approximately 14 million people are infected with HPV annually, half of whom are aged 15-24 years (2). The prevalence of HPV is highest among females aged 20-24 years (3). More than 50% of women acquire the HPV infection within 2 years of their first sexual activity (4, 5). Additionally, more a half million individuals are diagnosed with cervical cancer annually (7). In order to counteract the incidence of HPV among women, the FDA first approved the HPV vaccine in 2006; however, the prevalence of HPV and cervical cancer are still high. One reason for the continued high prevalence of HPV may be the reluctance of parents to have their children vaccinated with the HPV vaccine. In 2009, only an estimated 27% of female adolescents aged 13 to 17 received the full 3-series immunization against HPV (33). As such, researchers and healthcare providers have been investigating the reasons underlying the refusal of the HPV vaccine among parents. Based on these findings, new strategies must be developed to increase the uptake of the HPV vaccine and thus decrease the prevalence of HPV, and subsequently, HPV-related cervical cancer worldwide. The short-term goal of this research project is to identify the barriers preventing adolescents from receiving this vaccination, and increase the literacy of parents/guardians about HPV and the HPV vaccine. The
long-term goal of this work is to increase the uptake of the HPV vaccine among adolescents.

This study focuses on the following hypotheses and specific aims:

**Hypothesis 1: Improving parental health literacy regarding HPV and the HPV vaccine will increase the parent’s intent to vaccinate their child with the HPV vaccine.**

*Specific Aim 1.1* – To assess parental health literacy regarding HPV and the HPV vaccine.

*Specific Aim 1.2* – To determine the association between parental HPV literacy and HPV vaccine.

**Hypothesis 2: Healthcare provider recommendation for the HPV vaccine will influence parental perception regarding the HPV vaccine.**

*Specific Aim 2.1* – To determine how often healthcare providers provide knowledge regarding HPV and the HPV vaccine to parents and their patients.

*Specific Aim 2.2* – To determine the association between healthcare provider recommendation for the HPV vaccine and parental perception regarding the HPV vaccine.

**Hypothesis 3: Perceived barriers such as physical distance from a health clinic and cost of the HPV vaccine limits uptake of the HPV vaccine among adolescents.**

*Specific Aim 3.1* - To determine major barriers surrounding the refusal of HPV vaccination among parents.
SIGNIFICANCE

HPV is the leading sexually transmitted disease in the United States and is the primary cause of cervical cancer, which is the second most common cancer among women worldwide (1). From previous studies, HPV has been shown to be the primary cause of approximately 70% of cervical cancers (9, 17). The HPV vaccine has been shown to prevent HPV, and subsequently, cervical cancer. The resulting questions that many physicians and researchers have are, 1) if the HPV vaccine has been clinically tested and observed to have a high success rate in protecting teens and young adults from cervical cancer, then why is the uptake rate so low, and; 2) is this low uptake rate associated with a lack of parental understanding about HPV and the HPV vaccine? The data collected from this research project has the potential to help physicians identify potential barriers to the uptake of this particular vaccination, and will provide an opportunity to increase the awareness of HPV and the HPV vaccine to parents, and thus potentially increase the prevention of HPV and HPV-related cervical cancer.
CHAPTER III.
MATERIALS AND METHODS

Human Subjects

Parental Survey

This study is intended for both female and males aged 18+ and include all racial/ethnic groups. The primary sources of this study population are parents/guardians whose children are patients of Drs. Magie, Habiba or Bui in the Department of Pediatrics at the University of North Texas Health Science Center.

Study surveyors will obtain informed consent from parents/guardians. Consent forms will be provided and collected by surveyors, and a copy of the completed consent form will be given to each subject. The subjects can skip any question at any time, and can stop participating in the study at any time. The following inclusion and exclusion criteria were used:

Inclusion Criteria:

- Parents/guardians 18+ years old
- Children of the parents/guardians must be patients of Dr. Habiba, Dr. Magie or Dr. Bui
- Children of the parents/guardians must attend the UNTHSC Department of Pediatrics Clinic
Exclusion Criteria:

- Parents/guardians under 18 years of age

Physician Survey

Inclusion Criteria:

- Pediatricians working in the UNTHSC Department of Pediatrics

Exclusion Criteria:

- All others

Procedures

Parental Survey

There are two parts to this study, 1) the initial interview, and 2) a follow-up interview. During the initial interview, parents/guardians will be approached in the waiting room before their appointment with the physician. If they agree to participate in the study, a consent form will be presented and signed by the parent (Appendix C). The parent/guardian will then be asked to complete a multiple-choice questionnaire consisting of 50 questions that aim to evaluate their general perception of vaccinations in general, knowledge of HPV and the HPV vaccine, and potential obstacles that parents may face when obtaining immunizations for their child (Appendix E). The questionnaire will be completed on paper or electronically on a tablet. After completion of the questionnaire, a short 5- to 10-minute education session will be presented to each parent/guardian covering the basic information about HPV and the HPV vaccine (Appendix H).

In addition, a handout will be given to the parent/guardian to take home (Appendix G). The handout will include basic information regarding HPV and the HPV vaccine, in addition to
nearby locations to receive the vaccine, and costs for the vaccine. The parent/guardian will also be asked to provide the surveyor with an e-mail address and phone number so that they can be contacted for the follow-up interview.

Approximately 10 days after the initial interview, a follow-up interview will take place via telephone and/or email. The participants will be asked to complete the questionnaire a second time in order to assess their retention of knowledge regarding HPV and the HPV vaccine and changes in their perception and/or opinions after receiving the educational session about HPV and the HPV vaccine (Appendix E). The participants will have the option to complete the questionnaire through an online version or by telephone. The questionnaire administered will be the same version as the one presented during the initial interview.

**Physician Survey**

A different questionnaire consisting of 7 questions will be given to pediatricians in the Pediatrics Department at UNT Health Science Center via email (Appendix F). Pediatricians will be approached by the study personnel to obtain written consent for participation (Appendix D). Upon consent, the survey will be sent electronically to each participant. This survey will help assess the physician’s thoughts and perception behind the low uptake of the HPV vaccine among adolescents, and ask for recommendations to improve the uptake of the vaccine. Once the email consisting of the link to the survey is sent, pediatricians will have approximately 3 weeks to complete the survey on their own time before the survey link closes. The survey will take approximately 5 minutes to complete. A reminder email will be sent out 1-week prior to this deadline.
Data Analysis

Basic descriptive statistics, logistic regression analysis, and pre-/post- analysis will be performed to answer the research questions. Dr. Fernando and the study surveyors will monitor the survey data for completion.

Hypothesis 1: Improving parental health literacy regarding HPV and the HPV vaccine will increase the uptake of the HPV vaccine in their child.

Univariate Analysis, Hypothesis 1

The number and percentage of participants will be presented along with their demographics such as age, ethnic background, and the primary language spoken in their household. In addition, the number and percentages of the participants who do intend to vaccinate their child will be presented for the baseline survey and follow-up survey.

Bivariate Analysis, Hypothesis 1

The covariates for Hypothesis 1 that will be tested include: whether or not the parent/guardian had multiple jobs, if English was their primary language, if they had any health conditions or learning disabilities, and their age. Chi-square tests will be used to assess whether or not the covariates are potential confounders or effective modifiers in regards to the parent’s literacy of HPV and the HPV vaccine. In the Chi-square tests, the covariates will be cross-tabulated against whether or not the parent/guardian intends to vaccinate their child with the HPV vaccine. The results will determine whether or not there is an association between the parent/guardians level of literacy and their intent to get their child vaccinated with the HPV vaccine.
Hypothesis 2: Healthcare provider recommendation for the HPV vaccine will influence parental perception regarding the HPV vaccine.

Univariate Analysis, Hypothesis 2

The number and percentage of pediatricians that have mentioned HPV and the HPV vaccine to their patients will be presented.

Bivariate Analysis, Hypothesis 2

The covariates for hypothesis 2 are parent's religion, previous bad experiences with the participant’s healthcare provider and previous bad experiences with vaccines. Chi-square tests will be conducted in order to identify whether the covariates are potential confounders. Each covariate will be cross-tabulated with whether or not the parent/guardian intends to vaccinate their child with the HPV vaccine. Results of the Chi-square tests will determine whether or not there is an association between healthcare provider’s mentioning HPV and HPV vaccine and the parent’s/guardian’s intent to vaccinate their child.

Hypothesis 3: Perceived barriers such as physical distance from a health clinic and cost of the HPV vaccine limit uptake of the HPV vaccine among adolescents.

Univariate Analysis, Hypothesis 3

The variables for hypothesis 3 are: income, no transportation, time restraints (multiple jobs, no time off from work) and distance of HPV vaccine.

Bivariate Analysis, Hypothesis 3

Chi-square tests will be used to assess whether or not any of the dependent variables co-vary or are potential confounders. Each covariate will be cross-tabulated with whether or not the parent/guardian intends to vaccinate their child with the HPV vaccine. Results
of the Chi-square tests will determine whether or not there is an association with perceived barriers such as physical distance from a health clinic and cost of the HPV vaccine and the parent’s/guardians intent to vaccinate their child.
CHAPTER IV.

RESULTS

The groundwork for this research study has been completed so that data collection can now begin. Sample data sheets are included to show what data will be collected (Tables 1 - 7). We anticipate the analysis of the data to support our 3 hypotheses and lead to the following outcome: 1) an increase in the parent’s/guardian’s literacy regarding the virus and vaccine; 2) insights into the major barriers affecting parental choice to use the HPV vaccine; and 3) an increase in the uptake of the HPV vaccine in the Pediatrics Department at the UNTHSC, which would hopefully be generalizable to other sites.

The predicted outcome is that enhanced education of parents/guardians about the HPV vaccine will encourage parents/guardians to vaccinate their child with the HPV vaccine. It is likely that repetition and continual reminders and mentions of the HPV vaccine from healthcare providers will increase the uptake of the vaccine among children. A likely major source of resistance is parents/guardians having the misconception of the HPV vaccine that it will alter their child’s sexual behavior or attitudes, although previous studies have shown no correlation between the HPV vaccine and an increase in a child’s sexual behavior (30). In mentioning the HPV vaccine to these parents/guardians, healthcare providers should also include this important fact. If healthcare providers do not have to time to discuss the HPV vaccine, an alternative solution could be placing posters in the waiting room with simple facts regarding HPV and the
HPV vaccine, which could potentially increase the parents'/guardians' awareness and knowledge of this common sexually transmitted disease.

Another prospective problem that could be encountered is not enough feedback from pediatricians at the UNTHealth Sci. If this scenario occurs, we may consider distributing the short survey to other pediatricians in the Fort Worth area, for example, Cook Children’s Medical Center. Having the pediatrician’s feedback and input on the parent’s/guardian’s most common concerns and questions regarding the HPV vaccine is crucial in identifying the barriers that are preventing parents/guardians from vaccinating their child. Once we can find a solution to these identified barriers, we should expect the uptake of the HPV vaccine to increase and eventually the prevalence of cervical cancer lowered.

LIMITATIONS

As only the parents/guardians of patients of Drs. Habiba, Magie and Bui will be given the opportunity to participate, this study may not be generalizable to other populations or clinics and thus may not accurately represent the population at large. Furthermore, the questionnaire and educational session will not be offered in Spanish. The collected data will most likely be underrepresented in regards to the Hispanic population and/or individuals with lower levels of English proficiency. For future consideration, as this study continues, the questionnaire could be administered to other healthcare facilities (i.e., Cook Children’s Medical Center) in the area that provide to young children as well. Additionally, the questionnaire could be translated into Spanish to increase subject recruitment and increase the diversity of respondents. Interviewer bias may be present whereby an interviewer may subconsciously influence the subject’s response in a way that could potentially distort the accuracy of the results. To prevent this bias from
occurring, further training/information sessions could be set up so that each key personnel has the same amount of knowledge regarding HPV and the HPV vaccine. Additionally, information bias or bias arising from measurement error could potentially be an issue. Parents/guardians may misunderstand the questions, may be unable to comprehend what the question is asking, may be unwilling to disclose the information requested, and/or may give a response they believe to be more socially favorable. To avoid this, the key personnel will continue to urge each parent/guardian that they are not only there to administer the questionnaire but they are also available to answer any questions or concerns that may arise concerning the questionnaire and/or the study in general. Furthermore, the length of the questionnaire can play a role in the parent's response. For example, the longer the questionnaire, the increased likelihood that parents will reduce their efforts in appropriately responding, thus reducing the accuracy of the results. This is commonly preferred to as “survey fatigue”. To avoid this bias, once data collection has begun and after close observation of each participant, if survey fatigue is observed, further examination of each question in the questionnaire can be reevaluated and discarded if deemed repetitive and/or unnecessary. Another plausible limitation is the timing of the follow-up interview or temporality. The average time for retaining information varies among individuals. Since the follow-up interview is set at 10 days, the response in the second questionnaire can be affected due to some participants’ inability to recall certain information regarding HPV and the HPV vaccine previously covered in the educational session in the initial interview.

SUMMARY AND CONCLUSIONS

With cervical cancer being the second most common cancer among women, and with recent studies demonstrating that the HPV vaccine protects not only against HPV but cervical
cancer as well, numerous questions and concerns have surfaced among healthcare providers regarding why parents/guardians are not allowing their child to obtain the vaccination. One of the main reasons behind the low vaccination rates regarding the HPV vaccine may be due to the lack of knowledge about HPV and the HPV vaccine. Therefore, informing parents/guardians of the consequences of HPV and its relationship to cervical cancers and other cancers, as well as the benefits of the HPV vaccine would be most advantageous.

In order to increase the awareness of cervical cancer and the significance the HPV vaccine has on preventing this cancer, further research studies should be conducted. Continuing to study barriers to the HPV vaccine uptake should be conducted in other populations as well. Studies to evaluate various strategies to increase the uptake of the HPV vaccine, and to assess whether or not these strategies have significant impact would be beneficial. Researchers and healthcare providers have directed their efforts towards HPV and its implications with cervical cancer; however, there does not appear to be much focus on HPV and its implications with other cancers that affect both males and females, such as genital cancers and oral/laryngeal cancer. Although cervical cancer is the second most common cancer in women, preventing other cancers that affect both males and females is equally important. It may therefore be advantageous to include these consequences of HPV when educating the public about HPV and the HPV vaccine.
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<th>Totals (%)</th>
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<tr>
<td>High school graduate</td>
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<tr>
<td>Some college, did not graduate</td>
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<td>Bachelors degree</td>
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<td>Knowledge of HPV and HPV vaccine (Follow-up Survey)</td>
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Table 3: Potential comprehension variables (factors) by parent/guardian intent to vaccinate their child

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<td></td>
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Table 4: Characteristics of potential reasons for disregarding physician recommendation

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<th>Pediatrics have mentioned HPV and the HPV vaccine to their patients</th>
<th>Totals (%)</th>
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Religion

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<tr>
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Previous bad experiences with healthcare provider

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Previous bad experiences with vaccines

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Table 5: Potential reasons for disregarding of physician recommendation by parent/guardian intent to vaccinate their child

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<tr>
<th>Intention to vaccinate their child</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Odds Ratio (95% CI)</th>
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<td>Income</td>
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**Prevention of bringing child to the doctor**

- Cost of medicine
- Cost of doctor's visit
- Distance to hospital or clinic
- No transportation to hospital or clinic (no car, bus, train, etc.)
- Cannot leave work
- Cannot get child out of school
- No daycare for other children
- Other
- Missing

**Number of jobs currently employed at**

- 1
- 2
- 3
- 4+
- Currently unemployed
- Missing
| Table 7: Potential barriers towards the HPV vaccine by parent/guardian intent to vaccinate their child |
|----------------------------------|------------------|-----------------|------------------|
| Intent to vaccinate their child  | Yes (%)          | No (%)          | Odds Ratio (95% CI) |
| Income                           |                  |                 |                  |
| Less than $20,000                 |                  |                 |                  |
| $20,000 to $29,999               |                  |                 |                  |
| $30,000 to $39,999               |                  |                 |                  |
| $40,000 to $49,999               |                  |                 |                  |
| $50,000 to $59,999               |                  |                 |                  |
| $60,000 to $69,999               |                  |                 |                  |
| More than $80,000                |                  |                 |                  |
| I do not wish to answer          |                  |                 |                  |
| Prevention of bringing child to the doctor |                  |                 |                  |
| Cost of medicine                 |                  |                 |                  |
| Cost of doctor's visit           |                  |                 |                  |
| Distance to hospital or clinic   |                  |                 |                  |
| No transportation to hospital or clinic (no car, bus, train, etc.) |                  |                 |                  |
| Cannot leave work                |                  |                 |                  |
| Cannot get child out of school   |                  |                 |                  |
| No daycare for other children    |                  |                 |                  |
| Other                            |                  |                 |                  |
| Missing                          |                  |                 |                  |
| Number of jobs currently employed at |                  |                 |                  |
| 1                               |                  |                 |                  |
| 2                               |                  |                 |                  |
| 3                               |                  |                 |                  |
| 4+                              |                  |                 |                  |
| Currently unemployed            |                  |                 |                  |
| Missing                          |                  |                 |                  |
CHAPTER V. INTERNSHIP EXPERIENCE

INTERNSHIP SITE

This internship was conducted in the Pediatrics Department at the University of North Texas Health Science Center in Fort Worth under the supervision of Dr. Paul Bowman and Dr. Shane Fernando. Their mission is to continuously improve the quality of pediatrics healthcare, research and community service programs. Additionally, the Department of Pediatrics maintains a group of faculty that possesses various educational backgrounds and experience that contributes to the advancement of pediatric healthcare and research.

JOURNAL SUMMARY

Dr. Fernando and Grace Rovner, a 2nd year TCOM student, had just recently began discussing a research study with the goal of increasing the Human Papillomavirus (HPV) vaccine uptake in the Pediatrics department and because this was a fairly new project, I was added on to the team. In the beginning of my internship, in order to familiarize myself with the HPV and the HPV vaccine, Dr. Fernando assigned me to construct a literature review. Majority of my time was utilized to layout the groundwork for this clinical research study. Some of the tasks included constructing the IRB protocol, poster, physician questionnaire, recruitment script, and consent forms for the physicians. I also assisted Grace in the creating the handout and baseline survey for the parents/guardians. Furthermore, to increase my experience in clinical management, I held a
training session for 3 colleagues that will be assisting me collecting data. During this training session, we went over the recruitment process, obtaining consent, questionnaire administration, education session and the follow-up interview. To increase efficiency and to effectively utilize the 10-20 minutes we potentially had with our participants, we each practiced the whole recruitment process including the education session with each other.

Additionally, to increase my exposure in the process of obtaining IRB approval for clinical research studies, I assisted Dr. Fernando and Dr. Nusrath Habiba in their continuing review reports. I was also able to work along side Dr. Anna Espinoza, a former IRB liaison, where she not only assisted me in the continuing review for Dr. Habiba’s study but also gave me personal insight on federal regulations regarding clinical research. Through the completion of the continuing review, Dr. Deep Shah and I discovered discrepancies in the number of participants who consented to be contacted for future studies and the actual number contacted for a future study. Once these discrepancies were found and in order to avoid misdocumented information in the continuing review report, Dr. Shah, Dr. Habiba, Dr. Espinoza, and myself conducted a self-audit. Completion of the self-audit revealed several IRB violations. Not only were these violations reported to the IRB but also corrective actions by the PI were noted to reassure the IRB that these violations will not reoccur. During the self-audit, I also became more familiar with the SPSS software, which is used for statistical analysis. Additionally, to increase my exposure to regulations and guidelines pertaining to clinical research, I was able to attend an IRB meeting where I observed the process the board takes in approving or deferring a research study.

During my internship, I was also able to assist Dr. Habiba and Dr. Shah with data entry. I was again exposed to the SPSS software and was taught some of the basic statistics that can be
performed. Through this internship, I have not only learned about the numerous aspects involved in managing clinical research but the process of getting these studies approved by the IRB.
APPENDICES

A. Daily Journal
B. Recruitment Script
C. Parent Consent Form
D. Pediatrician Consent Form
E. Parent/guardian’s Questionnaire
F. Pediatrician’s Questionnaire
G. Handout
H. Poster
**Week 1**

Wednesday June 10\(^{th}\), 2015

I had a meeting with Dr. Shane Fernando where he assigned me a literature review over HPV and the HPV vaccine. We further discussed the HPV research project. The purpose of this research project is to increase the literacy of patient and their child on HPV and the HPV vaccine and by doing so, increase the uptake of the HPV vaccine.

Thursday June 11\(^{th}\), 2015

I began researching articles about HPV and the HPV vaccine for my literature review.

Friday, June 12\(^{th}\), 2015

I had a meeting with Grace, a TCOM student, and Dr. Fernando. Dr. Fernando discussed the methods of the HPV project and he assigned Grace and I to work collaboratively on a HPV handout, poster, and questionnaire that will be used in order to assess the literacy and retention of participants.

I also attended the Pediatrics Mobile Clinic Meeting where the committee discussed new potential locations for the mobile clinic. Also discussed where the arising issues such as dress code for volunteers and the progress of ongoing projects.

**Week 2/3**

Monday, June 15\(^{th}\) – 19\(^{th}\), 2015

I continued working on my literature review, the HPV handout, poster and questionnaire.

Tuesday June 23\(^{rd}\), 2015

A committee meeting took place where I presented my research topic to my committee. Doctors in attendance were Dr. Patricia Gwirtz, Michael Gatch, Paul Bowman, Shane Fernando and Caroline Rickards.

Wednesday June 24\(^{th}\), 2015

Meeting with Dr. Fernando discussing my progress on the tasks he assigned me. He gave input on the HPV handout, poster and questionnaire and clarified what should be fixed in order to efficiently utilize the 10-20 minutes we potentially have with our participants.

Dr. Fernando placed me in charge of creating a codebook for our questionnaire. Variables are assigned to each question and answer and are used to aid in analyzing data in a more organized and efficient way.

Thursday June 25\(^{th}\), 2015

I had a meeting with Dr. Deep Shah. He taught me the basics of SPSS, which is an analysis program that will be used to analyze our data once collected. I was also assigned to immunization data entry for a current project Dr. Shah and Habiba are working on.

Friday June 26\(^{th}\), 2015

I had a meeting with Dr. Nusrath Habiba, where she further explained the basics of SPSS before I began the immunization data entry. Dr. Gatch also sent back my literature review with comments and suggestions and I began editing my literature review.
**Week 4**

**Monday June 29th, 2015**
I continued editing my literature review, the HPV poster, handout, and questionnaire codebook.

**Tuesday June 30rd, 2015**
I continued with the immunization data entry and editing my literature review. Additionally, the HPV poster, handout and questionnaire have been finalized and completed.

**Wednesday July 1st, 2015**
I continued with the immunization data entry. I also met with Dr. Gatch updating him on my progress at my internship site. We also discussed my literature review and any questions or concerns I had about his comments and suggestions. Dr. Fernando assigned me to create a short questionnaire for physicians at the UNTHSC Pediatrics Center in order to help assess what is occurring during patient visits concerning HPV and the HPV vaccine. Some of the questions asked are: whether or not HPV and the HPV vaccine are mentioned during appointments and if not, why, the physicians perspective and opinions on ways to improve the delivery of HPV and HPV education.

**Week 5**

**Monday July 6th, 2015**
I continued with immunization data entry and continued working on the assessment of HPV vaccine among UNTHSC Pediatrics questionnaire.

**Tuesday July 7th, 2015**
I finished up with the immunization data entry. I also attended the Pediatrics Core Meeting where Drs. Bowman, Habiba, Fernando, Shah, Magi and Basha. At this meeting, each doctor updated the group on his or her progress on their own research projects.

**Wednesday July 8th, 2015**
A meeting with Dr. Habiba and Dr. Shah took place to discuss my questions I had over the immunization data entry. I also continued working on my research proposal.

**Friday July 10th, 2015**
Briefly met with Dr. Fernando to discuss potential hypothesis and limitation for my research proposal. Continued working on my research proposal.

**Week 6**

**Monday July 13th, 2015**
Dropped off a hard copy of my research proposal to both Dr. Bowman and Dr. Fernando.
Tuesday July 14th, 2015
Made minor edits to my research proposal after receiving additional suggestions and comments from Dr. Gatch.

Wednesday July 15th, 2015
I received feedback on my proposal from Dr. Rickards, Dr. Fernando and Dr. Bowman. I began to make edits on my proposal.

Thursday, July 16th, 2015
I continued making edits on my proposal.

Friday, July 17th, 2015
I met with each person on my committee to get my proposal signed. I also submitted my proposal to the GSBS office.

Week 7
Monday July 20th, 2015
Dr. Fernando assigned me to read “Clinical Research for Health Professionals.” The chapters I read briefly describes the anatomy and physiology of constructing a research project. It further went into the detail on the 5 phases of the research process which are as follows: (1) developing a question, (2) developing a method to answer the question, (3) collecting data, (4) analyzing, interpreting, and reflecting on the data, and (5) sharing the information.

Tuesday July 21st, 2015
I met with Dr. Gatch for our weekly meeting, keeping him updated on my progress and tasks assigned from the previous week. I continued reading “Clinical Research for Health Professionals.” In the chapters read, I learned about the potential mistakes that can be made with the investigator, the treatment, subjects, measurement, conducting studies over time and in math. More specifically, mistakes can be made at any point of the research study and attention to detail and double checking your work or having another key personnel check your work is extremely important as well.

Wednesday July 22nd, 2015
I continued reading “Clinical Research for Health Professionals.” The chapters I read discussed descriptive statistics and inferential statistics.

Week 8
Monday August 3rd, 2015
I met with Dr. Habiba and was asked if I would like to aid in one of her current research project regarding “Psychosocial and Physiological Predictors of Type 2 Diabetes Mellitus Risk among Children Aged 10-14.” She informed me that once I am added to the
protocol and approved by IRB I will be contacting subjects and asking for a verbal informed consent to access their child’s immunization record for further analyses

Wednesday August 5th, 2015
I completed the COI training online so that I can aid Dr. Habiba in her current research study regarding “Psychosocial and Physiological Predictors of Type 2 Diabetes Mellitus Risk among Children Aged 10-14.”

Week 9
Tuesday August 11th, 2015
Dr. Fernando assigned me to begin writing a protocol for my research project and to complete an IRB continuing reviewing report for one of his current studies. I also met with Dr. Gatch for our weekly meeting, updating him on my previous week of work.

Wednesday August 12th, 2015
I begin working on both my protocol and the continuing review report.

Thursday August 14th, 2015
I finished the continuing review report for Dr. Fernando. I also continued working on my protocol.

Friday August 15th, 2015
I continued working on my protocol.

Week 10
Monday August 17th, 2015
I completed and submitted my protocol to Dr. Fernando.

Wednesday August 19th, 2015
Dr. Habiba assigned me to start the IRB continuing review for her research project. I also attended a meeting with Dr. Habiba and Dr. Anna Espinoza discussing the continuing review report. We discussed which subjects should and should not be included in the report and what documents were needed to complete the progress report on her study, “Psychosocial and Physiological Predictors of Type 2 Diabetes Mellitus Risk among Children Aged 10-14.”

Week 11
Monday August 24th, 2015
I continued working on the continuing review report for Dr. Habiba. Dr. Shah taught me the basics of SPSS and this allowed me to efficiently figure out the maximum amount of subjects approved by IRB, the gender of the subjects and the race/ethnicity of subjects which were some of the data needed for the continuing review report.
Tuesday August 25th, 2015
I met with Dr. Gatch discussing my progress on my research project and updates on what I have been doing. I continued working on the continuing review report for Dr. Habiba.

Wednesday August 26th, 2015
I met with Dr. Espinoza regarding the continuing review report for Dr. Habiba. We discussed ways to improve and organize the report so that IRB will not have a difficult time reviewing and understanding the information reported. I also began working on a bio sketch for Dr. Fernando.

Friday, August 28th, 2015
Dr. Shah review the progress report and realized that there were some discrepancies. Upon finding these discrepancies, we also found that an IRB violation had occurred so we decided to do a last minute self audit to avoid misdocumented information in the IRB continuing review report.

Week 12
Monday August 31st, 2015
I submitted my bio sketch to Dr. Fernando. I continued to work with Dr. Shah on an self audit regarding the discrepancies found in number of immunization records pulled, the number of informed consent forms collected and the call log.

Tuesday September 1st, 2015
Dr. Espinoza, Dr. Shah and I continued auditing. I attended the Pediatrics Core Meeting where each doctor presented their updates/progress on their individual research studies to Dr. Bowman.

Wednesday September 2nd, 2015
Dr. Shah, Dr. Habiba worked on memorandum for Dr. Habiba’s study regarding “Psychosocial and Physiological Predictors of Type 2 Diabetes Mellitus Risk among Children Aged 10-14.” Here we had to state the IRB violations found and the corrective action the PI will take to prevent these violations from occurring again. I also began working on my recruitment script for the HPV study.

Thursday September 3rd, 2015
I continued working on my recruitment script.

Week 13
Tuesday, September 8th, 2015
I collected all COI forms from every key personal on the HPV study. I also completed the Exempted Review Application for my research study and submitted my study to IRB for approval.
Wednesday September 9th, 2015
Briefly met with Dr. Habiba and Dr. Shah discussing the feedback from IRB regarding the violations and corrective actions that were submitted.

Thursday, September 10th, 2015
I began working/editing my thesis.

Friday, September 11th, 2015
I continued editing my thesis based on the comments and feedback from my committee.

Week 14
Tuesday, September 15th, 2015
Attended my weekly meeting with Dr. Gatch to discuss my progress with my research study and my thesis.

Wednesday, September 16th, 2015
Re-edited both the parent/guardian questionnaire and the pediatrician questionnaire. I also continued to edit the background portion of my thesis.

Thursday, September 17th, 2015
I continued editing the background portion of my thesis based on the feedback from my committee.

Week 15
Monday, September 21st, 2015
I corrected the format of my bibliography and continued to edit the background portion of my thesis.

Tuesday, September 22nd, 2015
I met with Dr. Gwirtz and Dr. Gatch and we discussed my progress of my research study. We also concluded that due to time restraints, that I may not have enough data collected in time to analyze and for now that my

Wednesday, September 23rd, 2015
I began working on the results portion of my thesis.

Thursday, September 24th, 2015
I continued to work on the results portion of my thesis. I also began, completed, and correctly formatted the abstract, title, signature, and table of contents pages of my thesis.

Week 16
Monday, September 28th, 2015
I met with Dr. Fernando and we discussed a timeline and due dates on sections on my thesis. We also discussed what covariates are and he assigned me to come up with at least 3 or 4 covariates for each hypothesis. Additionally, we went over what an analysis plan was.

Tuesday, September 29th, 2015
Weekly meeting with Dr. Gatch to discuss updates on progress on my thesis. We also discussed using stimulated or generalized data for my thesis rather than me coming up with case scenarios for the results and analysis part of my thesis. I also met with Dr. Fernando to go over the training session that will take place on Thursday. The training session will consist of me teaching my team the recruitment process, education session and follow-up interview. Additionally, I resubmitted all updated paperwork to IRB for approval.

Wednesday, September 30th, 2015
I prepared a PowerPoint for my HPV study training session. I also continued working on the results portion of my thesis.

Thursday, October 1st, 2015
Training session with the 3 TCOM students that will be helping me collect data. We went over the recruitment process, consent form, survey administration, education session, and follow-up interview. They also practiced educating each other regarding the basic information on HPV and the HPV vaccine with the guidance of the HPV poster.

Friday, October 2nd, 2015
I began working on my analysis plan for my research study and I also continued working on the results portion of my thesis.

Week 17
Monday, October 5th, 2015
After suggestions from my fellow colleagues, I made minor adjustments to the surveys and created index cards that states the major signs and symptoms of cervical cancer. Each key personnel will have the index card as a reference when giving the education session the parents/guardians. I also created a template for the key personnel to write down questions asked by the parent/guardian that they are unable to answer. Once the key personnel writes down the question(s), the parent/guardian can easily hand over the sheet of paper to their child’s pediatricians when they are called in for their appointment. This allows for all questions that the parent/guardian has concerning HPV and the HPV vaccine to be answered in one visit.

Tuesday, October 6th, 2015
Attended an IRB meeting. During this meeting, the board reviewed new and existing projects. They discussed each study one at a time and came to an agreement on whether to approve or defer. For each study they also discussed whether to increase risk level
and/or to necessitate a more frequent review interval. Additionally, the PI for each study
was allowed to attend the meeting to answer any questions that the board had and to
ensure that their projects did not violate any rules and regulations. The board also briefly
reviewed over all the final reports. At the end of the meeting, the board also discussed an
incident that occurred at one of the university’s. A professor/researcher that had forged a
certificate of confidentiality came clean about the incident. That university is now under
heavy watch and continual audits even after the researcher resigned.

Wednesday, October 7th, 2015
I continued working on my analysis plans and results portion of my thesis.

Thursday, October 8th, 2015
I began constructing the tables for my results section of my thesis. I also continued
working on my analysis plan.

Week 18
Monday, October 12th, 2015
I continued to work on my tables and analysis plan for my thesis.

Tuesday, October 13th, 2015
I attended my weekly meeting with Dr. Gatch. We briefly reviewed my analysis plan and
tables. We also discussed what to include in my internship experience section of my
thesis.

Wednesday, October 14th, 2015
I completed the tables for my results section and began working on the internship
experience portion of my thesis.

Thursday, October 15th, 2015
I continued working on the internship experience portion of my thesis.

Week 19
Monday, October 19th, 2015
I continued working on the internship experience portion of my thesis.

Tuesday, October 20th, 2015
I attended my weekly meeting with Dr. Gatch. We discussed the formatting of my thesis
and briefly went over the internship experience and results portion of my thesis. We also
discussed

Wednesday, October 21st, 2015
I had a brief meeting with Dr. Rickards where I updated her the progress of my research
study and thesis.
Thursday, October 22nd, 2015
I had meetings with Dr. Bowman where I updated him on both the progress of my thesis and updates on my research study. I also had a meeting with Dr. Fernando. I updated him on the progress of my thesis. We briefly discussed the sample data that I will use to analyze since there is not enough time to collect and analyze actual data. He also informed that IRB approval was given for my research study. He assigned me to research affordable locations to print the HPV poster and to collect Drs. Habiba, Magie and Bui’s schedule to allow each key personal knowledge of which times are available for data collection.

Friday, October 23rd, 2015
I went to various printing locations for estimates on our poster. I also begin inserting all documents indicated in my appendices into my thesis.

Week 20
Monday, October 26th, 2015
I completed the abstract and internship experience portion of my thesis.

Tuesday, October 27th, 2015
I attended my weekly meeting with Dr. Gatch where we continued to discuss the layout of my thesis and minor edits to be made. We also briefly discussed what would take place during my defense.

Wednesday, October 28th, 2015
I began working on a PowerPoint for my defense. I also met with Dr. Magie and was introduced to Al Neyland, the administrative director for the Pediatrics Department. During this meeting I was able to obtain the monthly schedule for Drs. Habiba, Magie and Bui.

Thursday, October 29th, 2015
I met with Dr. Habiba to discuss a more efficient way to collect data since parents/guardians since appointments are cancelled and rescheduled daily and because Drs. Habiba, Magie and Bui only see patients on certain days and time. We briefly discussed that it may be best to include parents/guardians of patients of all pediatricians in the Pediatrics Department at UNTHSC instead of just Drs. Habiba, Magie and Bui. A copy of the protocol was sent to Dr. Habiba to see if changes should be made so that we can include all pediatricians in this research study.

Week 21
Monday, November 2nd, 2015
I continued to work on my PowerPoint presentation.

Wednesday, November 4th, 2015
I continued to work on my PowerPoint presentation.
Thursday, November 5th, 2015
I met with Dr. Gatch for our weekly meeting. We went over the rough draft of my PowerPoint and discussed what changes should be made for clarification and flow. We also briefly discussed the limitation section of my thesis.

Friday, November 6th, 2015
I began and completed the limitation section of my thesis.

Week 22
Monday, November 9th, 2015
I continued working on my PowerPoint presentation. I also began collecting data.
Recruitment Script

Hello, my name is ___________________. I am a student at the UNT Health Science Center and I am currently conducting a research study with Dr. Shane Fernando in the Pediatrics Department.

Participation in this research includes taking a questionnaire regarding your attitude and knowledge towards the Human Papillomavirus (HPV) and the HPV vaccine. This questionnaire will take approximately 10 minutes to 15 minutes following that a 5-minute education on basic information regarding HPV and the HPV vaccine. If you agree to participate in this research, the total time commitment will be between 15 to 20 minutes. Would you like to participate in this research study?

If Yes: Hand the parent/guardian an I-Pad so he/she can read the consent statement. Once the parent/guardian checks yes, giving consent to participate, the parent/guardian can begin the questionnaire.

If No: Thank you for your time and consideration.

Follow-Up Phone Script

Hello, my name is ______________. I am calling from the Pediatrics Department from UNT Health Science Center. Can I please speak to ____________(name of parent/guardian that completed the initial questionnaire).

If that parent/guardian is available: Good morning/afternoon Mr./Mrs. _________________(name of parent/guardian) Approximately 10 days ago, you participated in a research study regarding HPV and the HPV vaccine. I am calling you for a follow-up interview regarding this research study. This follow-up interview may take up to 15 minutes. Are you available to complete the following interview at this time?

If Yes: Proceed to notifying the parent/guardian that the follow-up interview will consist of them retaking the same questionnaire via telephone or online in order to measure their retention of information presented 10 days ago and whether or not their attitude towards the HPV and HPV vaccine has changed.

If they are unavailable at the time called: Is there a date and/or time that I can call you back to continue this follow-up interview?
If the parent/guardian does not wish to continue this research study:
   Thank you for your time and consideration.
Greetings! The University of North Texas Health Science Center (UNTHSC) is conducting a research project to better understand adult health knowledge and behaviors and thoughts regarding HPV and the HPV vaccine.

We are inviting you to participate in this research survey because your child is a patient of Dr. Habiba, Dr. Magie, or Dr. Priya Bui. This survey will gauge your ideas regarding and knowledge of HPV and the HPV vaccine, as well as ask basic demographic information. The survey will take approximately ten to fifteen minutes to complete. You need to be 18 years of age and above in order to participate in this survey.

Participation in the study is completely voluntary. If you decide to participate, please sign below under “YES, consent to participate.” If you choose not to participate, your treatment or the treatment of your child by any physician at UNT Health Science Center will not be affected.

The study will have two interviews. If you are unable to complete the first interview, you may choose to continue and complete the first interview in person after your appointment, or through a telephone call. After 10 days, you will be contacted by telephone to complete a second interview. You may choose to complete the second interview at that time, or you may choose to complete an online version. You may skip any question, and you can stop participating in the study at any time.

You will not be asked for your name or any other identifying information (such as your address) on the survey. Your survey responses will be kept as confidential as possible under current local, state and federal law. In the case that the final results of this study should be published, no individual results will be reported in any published material; only aggregate information will be provided.

If you have any questions regarding this research project, please feel free to contact: Dr. Shane Fernando at UNTHSC (817.735.2473). If you have any questions about your rights as a research subject, please contact the UNT Health Science Center Institutional Review Board at (817) 735-0409.

Thank you for participating in the study.
Yes, consent to participate

________________________________________
Name Date

________________________________________
Signature
Greetings! The University of North Texas Health Science Center (UNTHSC) is conducting a research project to better understand adult health knowledge, behaviors and thoughts regarding HPV and the HPV vaccine.

We are inviting you to participate in this research survey because you are a physician in the Pediatrics Department at UNTHSC. This survey will gauge your ideas regarding the potential barriers behind low uptake of the HPV vaccine among children and how to improve the vaccine uptake in the future. The survey will take approximately three to five minutes to complete.

Participation in the study is completely voluntary. If you decide to participate, please sign below under “YES, consent to participate.” If you choose not to participate, your relationship with UNT Health Science Center will not be affected.

You may skip any question, and you can stop participating in the study at any time.

You will not be asked for your name or any other identifying information (such as your address) on the survey. Your survey responses will be kept as confidential as possible under current local, state and federal law. In the case that the final results of this study should be published, no individual results will be reported in any published material; only aggregate information will be provided.

If you have any questions regarding this research project, please feel free to contact: Dr. Shane Fernando at UNTHSC (817.735.2473). If you have any questions about your rights as a research subject, please contact the UNT Health Science Center Institutional Review Board at (817) 735-0409.

Thank you for participating in the study.

Yes, consent to participate

____________________________________  __________________
Name                        Date

____________________________________
Signature
APPENDIX E.
PARENT/GUARDIAN’S QUESTIONIARRE
Assessing adult health literacy on HPV and the HPV vaccine

Research Consent Statement

1) Name of Key Personnel

2) After reading the above consent statement, do you agree to be a part of this study?*

○ YES, I consent to participate.
○ NO, I do not consent to participate.

3) What is your UIN (unique identification number)? This number should have been provided to you by the study surveyer.*

4) Please provide a current email address and phone number.

   Email Address: 
   Phone Number*: 

Demographics

5) What is your age?

○ 18-24
○ 25-34
○ 35-44
○ 45-54
○ 55+
6) How old is your child?

7) What is your ethnicity?
   - Hispanic
   - Non-Hispanic

8) What is your race? Check all that apply.
   - Caucasian/White
   - African-American/Black
   - Asian
   - American Indian
   - Other:

9) What is your gender?
   - Male
   - Female

10) What is your child's gender?
    - Male
    - Female

11) What is your religion?
    - Christian
    - Islam
    - Church of Christ
    - Scientist (Christian Science)
    - Other:
12) How many children live in your household? Please enter the number of children for each age group.

Less than 1 year old: 

Between 1 and 3 years old: 

Between 4 and 6 years old: 

Between 7 and 13 years old: 

Between 14 and 18 years old: 

13) What is the highest education completed in your household?

- Some High school
- High school graduate
- Some college, did not graduate
- Associates degree
- Bachelor’s degree
- Graduate degree (Masters+)
- Professional degree

14) How long have you lived in the U.S.?

- less than 6 months
- 6 months - 1 year
- 1-3 years
- more than 3 years
15) Are you the first generation to live in the U.S.?

☐ Yes
☐ No

16) What is your total household income?

☐ Less than $20,000
☐ $20,000 to $29,999
☐ $30,000 to $39,999
☐ $40,000 to $59,999
☐ $60,000 to $79,999
☐ More than $80,000
☐ I do not wish to answer

17) How many jobs do you currently have?

☐ 1
☐ 2
☐ 3
☐ 4+
☐ Currently unemployed

18) Do you have any health conditions?

☐ Attention Deficit Hyperactivity Disorder (ADHD)
☐ Alzheimer's Disease
☐ Multiple Sclerosis
☐ Other: [ ]
☐ None
Health Insurance

19) What type of health insurance does your child have? Check all that apply.

☐ None
☐ Medicaid
☐ Medicare
☐ CHIP
☐ Private insurance
☐ Other: ____________________________________________
☐ I do not wish to answer

20) What type of health insurance do you have?

☐ None
☐ Medicaid
☐ Medicare
☐ Private insurance
☐ Other: ____________________________________________
☐ I do not wish to answer

Understanding HPV

21) Please answer "yes" or "no" to the following questions.

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you know what HPV is?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Do you understand how HPV is spread?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Question</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
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<td>-------</td>
</tr>
<tr>
<td>Do you believe HPV is spread only through sexual contact?</td>
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<td></td>
</tr>
<tr>
<td>Do you believe HPV can cause health problems?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you believe your child is at risk for HPV?</td>
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<td></td>
</tr>
<tr>
<td>Do you believe HPV can cause cancer?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you believe your child is at risk for cervical or penile cancer?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

22) Please answer "True" or "False" to the following statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is more than one type of HPV.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is a HPV vaccine for girls.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is a HPV vaccine for boys.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Condoms fully protect against HPV.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPV is a common sexually transmitted infection.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is no cure for HPV.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The HPV vaccine will increase sexual activity.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
23) How many shots are needed for the HPV vaccine to be effective?

☐ 1
☐ 2
☐ 3
☐ More than three

24) Has your child ever received a shot or vaccine for HPV?

☐ Yes
☐ No

25) How many times has your child received a shot or vaccine for HPV?

☐ 1
☐ 2
☐ 3

26) Why was the 3-shot vaccination not completed? Check all that apply.

☐ Not enough money
☐ Do not know how to get the vaccine for my child
☐ Do not know where to get the vaccine for my child
☐ Spoke to other parents who do not like the vaccine
☐ Did not know three shots are needed
☐ Other: 

______________________________________
Language

27) What is the primary language spoken in your household?

- English
- Spanish
- Vietnamese
- Mandarin/Cantonese
- French
- Burmese
- Other: [blank]

28) If your primary language is NOT English, do you find it difficult to communicate with your doctor?

- Not at all
- Rarely
- Sometimes
- Frequently
- All the time
- English is my primary language

29) Have you ever had a translator help you communicate with a doctor (or healthcare provider)?

- Yes
- No
- Not sure
- I did not know I could have a translator
Barriers to Vaccination

30) Which of the following (if any) have prevented you from bringing your child to the doctor in the past 12 months? Check all that apply.

☐ Cost of medicine
☐ Cost of doctor's visit
☐ Distance to hospital or clinic
☐ No transportation to the hospital or clinic (no car, bus, train, etc.)
☐ Cannot leave work
☐ Cannot get child out of school
☐ No daycare for other children
☐ Other: 

Attitudes on Vaccination

31) Vaccination will protect my child.

☐ I strongly agree  ☐ I agree  ☐ I don't agree or disagree  ☐ I disagree  ☐ I strongly disagree  ☐ Unsure/Don't Know

32) Vaccinations will hurt my child.

☐ I strongly agree  ☐ I agree  ☐ I don't agree or disagree  ☐ I disagree  ☐ I strongly disagree  ☐ Unsure/Don't know

33) How many of the required vaccinations for school has your child received?

☐ All of the required vaccines
☐ Most of the required vaccines
☐ Few of the required vaccines
☐ None of the required vaccines
☐ Unsure/I don't know
34) Have you ever had a health professional (doctors, nurses, pharmacists, etc.) give your child the flu shot?

☐ Yes
☐ No

35) Would you give your child a vaccine that was not required by school?

☐ Yes
☐ No

Differences from other Vaccinations

36) Compared to other vaccines your child has received, what is your level of concern for:

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<tr>
<th></th>
<th>Strongly Concerned</th>
<th>Somewhat Concerned</th>
<th>Neutral/Unsure</th>
<th>Slightly Concerned</th>
<th>Not Concerned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Giving Gardasil, the HPV vaccine, to your child</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>The safety of Gardasil</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Getting Health Information

37) Who/what do you rely on for health information? Check all that apply.

☐ Physician/Doctor
☐ Nurse
☐ Pharmacist
☐ Internet
☐ Family
☐ Friends
☐ Television
☐ Community
☐ Radio
☐ Religious organization

☐ Other: 

38) Who/what do you rely on for vaccine information? Check all that apply.

☐ Physician/Doctor
☐ Nurse
☐ Pharmacist
☐ Internet
☐ Family
☐ Friends
☐ Television
☐ Community
☐ Radio
☐ Religious organization

☐ Other:
39) Do you have a primary healthcare provider?

☐ Yes
☐ No

40) Have you had any bad past experiences with your physician/healthcare provider?

☐ Yes
☐ No

41) If your physician/healthcare provider recommends the HPV vaccine for your child, how likely will you vaccinate your child with the HPV vaccine?

☐ Very likely
☐ Somewhat likely
☐ Not too likely
☐ Unlikely
☐ I don't know

42) Has a healthcare provider ever spoken to you about the HPV vaccine?

☐ Yes
☐ No
☐ Don't remember

43) What type of healthcare provider has spoken to you about the HPV vaccine? Check all that apply.

☐ Physician/Doctor
☐ Nurse
☐ Pharmacist
☐ Physician's assistant (PA)
☐ Medical administrator or assistant (MA)
☐ Other: [ ]
Vaccination Convenience

44) Do you know where you can get access to the HPV vaccine? Check all that apply.

☐ Doctor’s office
☐ Pharmacy
☐ Health Department
☐ Community clinic
☐ Other: [ ]

45) Insurance may cover some or all of the cost of the vaccine. Would you get the HPV vaccine if you had to pay up to an additional $25 out of pocket?

☐ Yes
☐ No
☐ I’m not sure

46) If the HPV vaccine was free, would you get it for your child?

☐ Yes
☐ No
☐ I’m not sure

47) Vaccines for Children (VFC) is a federally funded program that provides free vaccines to children whose parents or guardians may not be able to afford them. Children must be 19 or younger and on Medicaid, CHIP, underinsured, or uninsured. VFC provides Gardasil, the HPV vaccine, free of charge. Knowing this, would you give your child Gardasil if he or she qualified with VFC?

☐ Yes
☐ No
Long-term Effects

48) Do you believe the HPV vaccine has any long-term effects?

☐ Yes
☐ No

49) Which of the following long-term effects worry you about HPV vaccines? Check all that apply.

☐ My child will be at an increased risk for getting cervical cancer.
☐ My child will become permanently disabled.
☐ My child will engage in more sexual activity.
☐ My child will become infertile (unable to have children).
☐ My child will be at risk for serious infections.
☐ My child will become tired and always achy.
☐ Other: [ ]

50) How likely is it that your child will get an HPV vaccine, within the next 12 months?

☐ Very likely ☐ Somewhat likely ☐ Not too likely ☐ Unlikely ☐ I don't know what Gardasil is

Thank You!
STUDY TITLE: Assessment of health literacy and potential barriers regarding Human Papillomavirus (HPV) and the HPV vaccine among adults/guardians.

Principal Investigator: Dr. Shane I Fernando

Co-Investigators: Dr. Nusrath Habiba, Dr. Richard Magie, Dr. Priya Bui

Institution: University of North Texas Health Science Center

Greetings! The University of North Texas Health Science Center (UNTHSC) is conducting a research project to better understand adult health knowledge, behaviors, and thoughts regarding HPV and the HPV vaccine.

We are inviting you to participate in this research survey because you are a physician in the Pediatrics Department at UNT HSC. This survey will gauge your ideas regarding the potential barriers behind low uptake of the HPV vaccine among children and how to improve the vaccine uptake in the future. The survey will take approximately three to five minutes to complete.

Participation in the study is completely voluntary. If you decide to participate, please sign below under “YES, consent to participate.” If you choose not to participate, your relationship with UNT Health Science Center will not be affected.

You may skip any question, and you can stop participating in the study at any time.

You will not be asked for your name or any other identifying information (such as your address) on the survey. Your survey responses will be kept as confidential as possible under current local, state, and federal law. In the case that the final results of this study should be published, no individual results will be reported in any published material; only aggregate information will be provided.

If you have any questions regarding this research project, please feel free to contact: Dr. Shane Fernando at UNTHSC (817.735.2473). If you have any questions about your rights as a research subject, please contact the UNT Health Science Center Institutional Review Board at (817) 735-0409.
Thank you for participating in the study.

1) After reading the above consent statement, do you agree to be a part of this study?
   - YES, I consent to participate.
   - NO, I do not consent to participate.

2) Do you mention HPV and the HPV vaccine to your patients?
   - Yes
   - No

3) From a scale of 1 (NEVER) - 100 (ALWAYS), how often do you mention the HPV vaccine?
   0 ________________________[ ]_____________________________ 100

4) What are some reasons you may have for not mentioning the HPV vaccine? Check all that apply.
   - Not enough time/time consuming
   - Low parental awareness
   - Hard selling an expensive vaccine
   - Difficulty in initiating the conversation
   - Unfamiliar with HPV and the HPV vaccine
   - The HPV vaccine isn't safe
   - Other - Write In:
5) What do you believe are the major barriers for parents and their child for not receiving the HPV vaccine? Please rank the following from the most important to the least.

- No transportation
- HPV vaccine price
- Unaware of where they can receive the HPV vaccine
- Lack of knowledge of HPV
- Religious beliefs against vaccines
- Concern for safety of HPV vaccine
- Other
- Lack of knowledge of the HPV vaccine

6) Please answer "True" or "False" to the following statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents have a negative attitude toward vaccination</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Parents feel uncomfortable discussing their child's sexual behavior.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Parents worry that the HPV vaccine leads to riskier sexual behavior.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Parents do not care about vaccines that are not mandatory by their child’s school.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Parents believe that his/her child received too many other vaccines already.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Parents do not believe in the efficacy of the vaccine.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Parents believe their child is too young for the HPV</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Parents feel that their child cannot be infected by HPV.

7) What do you believe to be the most efficient and effective way to deliver education about HPV and the HPV vaccine?

- Volunteers to help inform parents and patients
- Handouts
- Clinic poster
- More time with parents and patients during appointment
- Digital education (Short videos, computer-aided education)

8) Do you have any suggestions that will help improve the uptake of the HPV vaccine?

Thank You!

Thank you for taking our survey. Your response is very important to us.
What you need to know about Human Papilloma Virus (HPV)

The Facts
- HPV is the most commonly sexually transmitted virus in the United States.
- Most people who have HPV don’t know they have it. There are often no symptoms, and it goes away on its own — without causing serious health problems.
- Condoms may lower chances of getting HPV, genital warts, or cervical and penile cancer if used the right way every time you have sex. However, HPV can infect areas that are not covered by a condom — so you should not expect condoms to fully protect against HPV.
- There are over 100 kinds of HPV.
- It is only persistent HPV infections (the kind that don’t go away for years) that put people at risk for cancer.
- There is no cure for HPV.

Lower the Risk
- Gardasil protects boys and girls from 4 types of HPV, 2 that cause genital warts and 2 that cause cervical and penile cancer.
- The vaccine is given in 3 doses over 6 months.
- Gardasil is most effective when all doses are received before a person has sexual contact with his or her first partner.
- Recommended to 11-12 year old girls and boys. Girls and boys can receive the vaccine as early as age 9 and up to age 26.

Where to Vaccinate
1. Vaccines for Children (VFC) Program
   - Children younger than age 19
   - Medicaid-eligible, American Indian or Alaska Native, or no health insurance
   - Provides vaccines at no cost to children who might not otherwise be vaccinated because of inability to pay
   - Vaccines have been distributed by the Centers for Disease Control and Prevention (CDC)

2. Costco
   - 5300 Overton Ridge Blvd, Fort Worth, 76132, (817) 210-0002
   - $160/dose
   - Do not need to be a Costco member
   - Supplies limited. Be sure to call ahead to make sure vaccine is in stock and pharmacist on duty can administer the dose

3. UNTHSC Patient Care Center
   - 855 Montgomery St, Fort Worth, 76107, (817) 735-3627
   - Accept most HMO, PPO, and commercial insurance programs
   - Accept Medicaid, Medicare, and CHAMPUS assignments
   - Please refer to your individual insurance company to check for provider eligibility.
   - For billing questions, please call (817) 547-9565

4. Call your pediatrician for availability and details.
APPENDIX H.
HPV POSTER
Human Papillomavirus (HPV)

Facts about HPV

- Roughly 79 million Americans are infected with HPV.
- HPV is the most common sexually transmitted disease in the U.S.
- Boys and girls can get HPV, but only girls show symptoms.
- HPV can cause cervical, genital and voice-box cancer.
- Cervical cancer is the second most common cancer among women worldwide.
- Gardasil, a HPV vaccine, can protect against cancer.
- Gardasil is available for both girls and boys.
- Condoms do not fully protect against HPV.

Protect your child from cancer, get them the HPV vaccine.

HPV-associated Cervical Cancer (last updated 2014)
How the HPV vaccine works

It is highly recommended to vaccinate your child at the **age of 11 or 12 years** but it can be administered to your child between the **age of 9 and 26 years**.

When does my child get **Gardasil**, the HPV Vaccine?

<table>
<thead>
<tr>
<th>Doses</th>
<th>Time Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; Dose</td>
<td>0 months</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Dose</td>
<td>2 months</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; Dose</td>
<td>6 months</td>
</tr>
</tbody>
</table>

*In order for the HPV vaccine to be effective, 3 doses of the vaccine must be administered.*
BIBLIOGRAPHY


