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Barriers To The Administration Of The Influenza Vaccine

Lauren Babb
Mississippi University for Women

Heather Bishop
Mississippi University for Women

Carrie Dozier
Mississippi University for Women

Renea Hopple
Mississippi University for Women

Hannah Marlin
Mississippi University for Women

See next page for additional authors

Author
Lauren Babb, Heather Bishop, Carrie Dozier, Renea Hopple, Hannah Marlin, and Jennifer Sartin

BARRIERS TO THE ADMINISTRATION OF THE INFLUENZA VACCINE

By

Lauren Babb

Heather Bishop

Carrie Dozier

Renea Hopple

Hannah Marlin

Jennifer Sartin

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Graduate Committee Approval

The Graduate Committee of

Lauren Babb, Heather Bishop, Carrie Dozier, Renea Hopple,

Hannah Marlin, and Jennifer Sartin

hereby approves their research project as meeting

partial fulfillment of the requirements for the Degree of

Master of Science in Nursing

Approved: _____
Committee Chair

Approved: _____
Committee Member

Approved: _____
Committee Member

Approved:

_____
Director of Graduate Studies

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By

Lauren Babb, BSN, RN

Heather Bishop, BSN, RN

Carrie Dozier, BSN, RN

Renea Hopple, BSN, RN

Hannah Marlin, BSN, RN

Jennifer Sartin

Mississippi University for Women, 2018

Supervising Faculty: Brandi Lambert, DNP, FNP-C

Abstract

The Centers for Disease Control and Prevention (CDC) estimates that since 2010 influenza has caused between 9.2 million and 60.8 million illnesses. Numbers from the 2015-2016 influenza season indicate that influenza vaccination prevented approximately 5.1 million influenza illnesses. Though most healthy individuals recover from the flu within 2 weeks, there is great concern for those who do not as this can lead to serious complications. Vulnerable populations, such as the elderly, children, pregnant women and individuals with chronic disease that contract influenza, are at risk for more severe illnesses such as sinus infections or bacterial pneumonia. Influenza can lead to worsening of preexisting chronic diseases including asthma and diabetes. It can also lead to death in these high-risk populations. Complications associated with influenza greatly affect the health of our nation and place a tremendous burden on the healthcare community (Rolfes et al., 2016).

. This quantitative research study was conducted to determine the barriers to the administration of the influenza vaccine. The purpose of this study was to determine what percentage of the clinical patients in north Mississippi did not receive the influenza vaccine and, of those patients, what the barriers were to vaccine uptake. A convenience sample was utilized to obtain approximately 600 questionnaires. Participants were asked whether or not they had received the influenza vaccine for this current flu season; if not, they identified personal barriers to not being vaccinated. The patient chose from possible barriers, i.e., expense, time, location, fear of getting the flu, drug allergy, fear of the vaccine, and lack of awareness of the potential dangers of influenza. Once these barriers were defined, the patients were asked to participate in the study in an effort to improve the quantity of influenza vaccine administration in our community.

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CHAPTER I

Introduction: Dimensions of the Problem

Influenza, more commonly called the flu, is a contagious respiratory infection caused by a variety of flu viruses that infect the nose, throat, and lungs. Symptoms of the flu are fever, chills, muscle aches, coughing, congestion, headache, and fatigue (National Institute of Allergy and Infectious Diseases [NIAID], 2017). Most healthy individuals recover from the flu within 2 weeks. However, there is great concern for those who do not recover promptly as this can lead to complications. Specific vulnerable populations are the elderly, children, pregnant women, and individuals with chronic disease. Influenza in these susceptible populations can easily progress to more severe illnesses, such as sinus infections or bacterial pneumonia. Influenza can lead to worsening of preexisting chronic diseases, e.g., asthma and diabetes. The acute illness can also lead to death in these high-risk populations. Complications associated with influenza greatly affect the health of our nation and place a tremendous burden on the healthcare community (Centers for Disease Control [CDC], 2017d).

Since 2010, the CDC has published an annual report describing the impact of annual vaccination and the burden of influenza in the United States. The CDC estimates that since 2010 influenza has caused between 9.2 million and 60.8 million illnesses, 140,000 and 710,000 hospitalizations, and 12,000 and 56,000 influenza associated deaths. The most recent numbers from 2015-2016 indicated that influenza vaccination prevented approximately 5.1 million influenza illnesses, 2.5 million influenza-associated medical visits, and 71,000 influenza-associated hospitalizations.

Approximately 3,000 influenza cases were associated with deaths in 2015-2016 (Rolfes et al., 2016).

Background of the Problem

During the 20th century, the use of vaccines has increased the world's life expectancy and longevity. The once debilitating or deadly illnesses, small pox and polio, have been eradicated or strictly controlled with the use of vaccines. Vaccines are among the most cost-efficient and effective preventative services available. For example, the current childhood immunization program has the potential to save 33,000 lives and 14 million cases of diseases, while reducing healthcare costs by $9.9 billion. However, despite the documented benefits of vaccination, infectious diseases remain a major cause of illness, disability, and death. Nearly 42,000 adults and 300 children in the United States die each year from vaccine-preventable diseases—one of which is influenza (Office of Disease Prevention and Health Promotion, 2017).

One concern related to vaccine-preventable diseases like influenza is the segment of the population that is unvaccinated or under-vaccinated. When the population as a whole is not sufficiently vaccinated, there is a greater risk for a potential pandemic outbreak. The influenza virus is capable of undergoing small variations to its genetic structure; hence, the reason a yearly vaccine modification is required and why yearly vaccination is imperative (NIAID, 2012). The World Health Organization's Global Influenza Surveillance and Response System (GISRS) was established in 1952 to monitor the frequent changes in influenza viruses with the goal of reducing the impact of influenza disease through the use of vaccines (CDC, 2017a).

The most noteworthy influenza pandemic occurred in 1918. An estimated 50 million lives were lost worldwide. Recurrent pandemics took place in 1957, 1968, and most recently in 2009 with the H1N1 outbreak (NIAID, 2017). Unlike the 1918 pandemic, there were more resources to combat the 2009 outbreak. For instance, the media broadcasted the growing influenza problem by informing the public of modes of disease transmission, describing the signs and symptoms, and urging people to get vaccinated. High-risk groups including children and the elderly were prioritized for vaccination. As a result of increased public awareness, 40% of the overall population received the influenza vaccine with 70% of those being high-risk individuals (Hilyard, Quinn, Ki, Musa, & Freimuth, 2014).

Prevention and control of seasonal influenza begin with vaccination. Childhood influenza vaccination is dependent on the choice of the parent. All children over 6 months old should receive the vaccine as they are a large vector of potential transmission (Hilyard et al., 2014). All adults are encouraged to take the vaccine, especially those over 50 years of age, those with chronic medical conditions (e.g., diabetes, chronic obstructive pulmonary disorder and cardiovascular diseases), those with a body mass index (BMI) of over 40, women who plan to be pregnant during the flu season, and any caregiver of a high-risk patient (CDC, 2017d).

Statement of the Problem

Influenza is a vaccine-preventable illness. Infection from influenza can cause serious illness, hospitalization, and even death. According to the CDC, seasonal influenza is highest in children; however, the risk for complications is higher in adults ages 65 years and older. Studies show that those who receive the flu vaccination have

40% to 60% less risk of developing the influenza infection than those who do not receive the vaccination. The CDC also reported there was a 9.2 million vaccine dose decrease from the 2010-2011 flu season to the 2015-2016 flu season. This directly correlates with increases in cases of flu, flu-related illness, and flu-related deaths that may have been prevented by obtaining the influenza vaccine. The flu vaccine continues to be the principal approach to prevent influenza. Despite influenza being a vaccine-preventable illness, there are some patients that continue to decline their annual influenza vaccine (Rolfes et al., 2016).

Purpose of the Research Project

The purpose of this study was to determine the barriers to the administration of the influenza vaccine. Once these barriers were defined, the study used them to propose ideas to improve the administration quantity. Using Nola Pender's Health Promotion Model as a guide, her concepts of prior related behavior, personal factors, perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity-related affect, interpersonal influences, situational influences, commitment to a plan of action, immediate competing demands and preferences, and health-promoting behavior were explored to determine ways to increase the rate of influenza vaccine administration (Sakraida, 2014).

Significance of the Research

During its annual influenza press briefing on September 28, 2017, the U.S. Department of Health and Human Services (HHS) stated that the flu is not a minor problem but a potentially serious respiratory illness that can involve hospitalization and death. The flu is an issue that touches every American life (HHS, 2017). According to

the HHS, the flu causes millions of illnesses, hundreds of thousands of hospitalizations, and thousands or sometimes tens of thousands of deaths each flu season. The department highlighted that, among all people 6 months and older, flu vaccination coverage during the 2016–2017 flu season was 46.8%, leaving more than half of all Americans unprotected from flu (HHS, 2017). This study recognized this issue of noncompliance and determined why it is present. By recognizing barriers, the current study will improve awareness and develop education to assist the public in overcoming these barriers and aid providers in practical intervention.

Conceptual Framework

Nola J. Pender's Health Promotion Model (HPM) was used to guide the current study. The HPM is a middle-range nursing theory that views the patient from a holistic approach and focuses on improving well-being and health-related quality of life by increasing and sustaining health-promoting behaviors. The model is proactive, simple, and encourages improved quality of life while inevitably reducing healthcare costs (Shin, Kang, Park, Cho, & Heitkemper, 2008). According to Pender, the model is defined as an evolving life experience that involves the actualization of inherent and acquired human potential through goal-directed behavior, competent self-care, and satisfying relationships with others (Pender, 2011). Many external components affect an individual's physical health and health choices. These can include the environment, work, interpersonal relationships, time, and money. Pender views the patient as a whole, noting that many components factor in to who the patient is and his or her choices. For example, interventions targeted to reduced blood pressure and risk for cardiovascular disease are exercise and a healthy diet. The goal is improved

cardiovascular status. However, the exercise and diet will also improve mood and contribute to weight loss, thus improving overall well-being (Pender, Murdaugh, & Parsons, 2011).

Pender's model also promotes making healthy choices and motivating people to take initiative to improve their health. The HPM encourages healthcare providers to educate patients as a means of preventing illness and achieving maximum health. It advocates using positive motivators and avoiding fear tactics. Pender brings attention to the fact that healthcare choices lie in the hands of the patient. Changes in outcomes can be made by researching patients' behaviors and attitudes toward health and healthcare. When providers are equipped with strategies and knowledge regarding health promotion and barriers to it, they can promote health, decrease healthcare costs, and improve patient outcomes (Shin et al., 2008).

When developing her theory, Pender included concepts from three behavioral theories. Her concepts were derived from Albert Bandura's social learning theory, or social cognitive theory. It factors in the importance of knowledge and understanding for behavioral adaptations. The expectancy value model of human motivation which emphasizes the rational and economical aspects of behavior was used by Pender as well. Pender also incorporated the Health Belief Model (HPM) when discussing behavior regarding disease prevention. She does not include the aspects of threats and fear that the HBM does but emphasizes the importance of avoiding those tactics (Sakraida, 2014).

Using concepts from these theories and her research, Pender identified six modifiable variables that influence behavioral outcomes. First, perceived benefits of

action relate to the personal rewards of a health behavior. Perceived barriers to action refer to what is preventing a person from participating in a certain health behavior. Perceived self-efficacy is defined as a person's self-confidence in being successful in performing the health-related behavior. Activity-related affect is the emotional experience of performing the health behavior. Interpersonal influences are the presence or absence of family support. Lastly, situational influences refer to the environment around a person and the influence it has on health behavior (Pender, 2011).

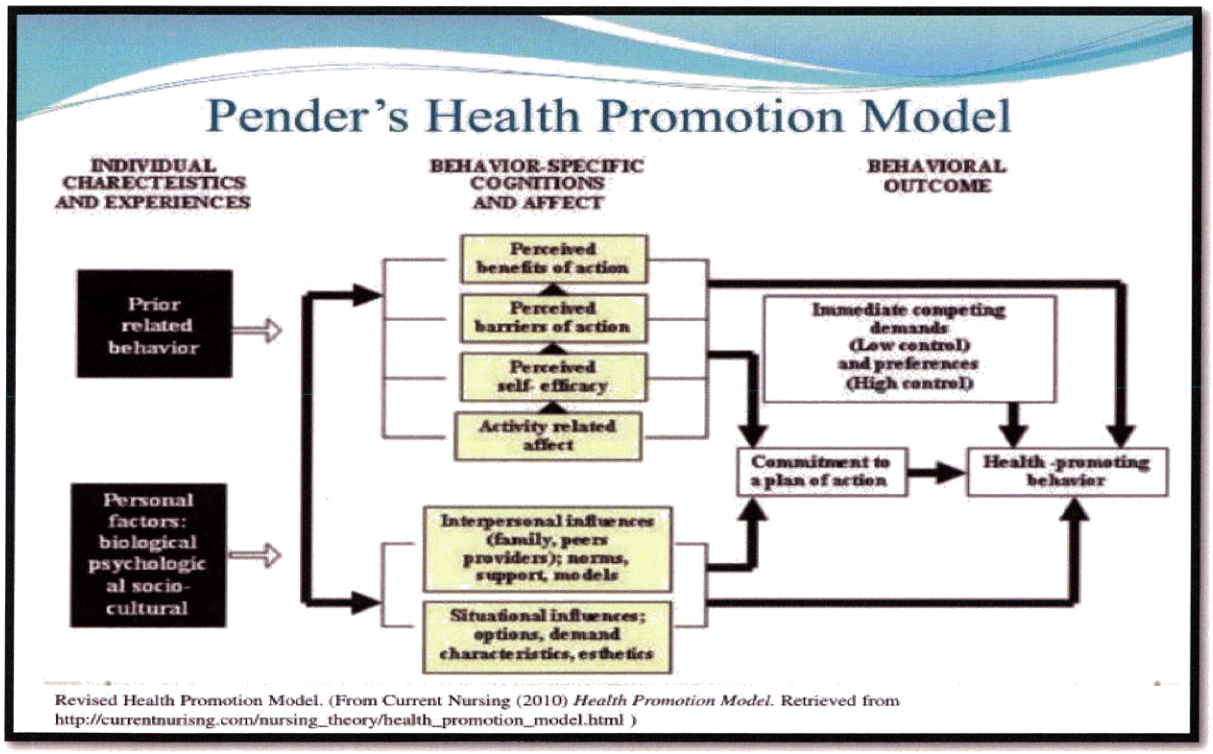

Figure 1. Pender's Health Promotion Model.

Research Questions

Two research questions were developed to guide data collection regarding barriers to the influenza vaccine. The two questions are as follows:

1. What percentage of the population surveyed in north Mississippi did not receive the influenza vaccine?
2. Of the percentage of the population surveyed that did not receive the influenza vaccine, what were the barriers to vaccine uptake?

Definition of Terms

For the current study, several terms were defined as they apply to the study. The theoretical and operational definitions are as follows:

Population

Theoretical: The members of a particular nation, community, or ethnic group (*English Oxford Living Dictionaries*, 2017).

Operational: Any human between the ages of 18 and 64 years.

Influenza vaccine

Theoretical: Inactivated vaccine refers to vaccine that contains inactivated or "dead" virus. The flu shot is an inactivated virus vaccine. Inactivated virus vaccines cannot cause infection in a vaccinated person (CDC, 2017e).

Operational: Any injection that contains the inactivated influenza virus given to people between the ages of 18 and 64 years.

Barriers

Theoretical: Perceived barriers to action are anticipated, imagined, or real blocks and personal costs of undertaking a given behavior (Sakraida, 2014).

Operational: Anything that obstructs or impedes people from receiving the influenza vaccination.

Vaccine uptake

Theoretical: On a population level, the coverage level or use of a vaccine. A high-uptake rate indicates that a vaccine is widely taken by a target population. A low-uptake rate means the vaccine is not widely taken (College of Physicians of Philadelphia, 2017).

Operational: The number of people that received the influenza vaccine.

Assumptions

For the purpose of this study, the following assumptions were made:

1. The researchers assumed that people understand that a flu vaccine exists.
2. The researchers assumed that people know a flu vaccine is available to them through various networks.
3. The researchers assumed people know that a yearly flu vaccine is recommended.
4. The researchers assumed that people know whether or not they have received the flu vaccine.
5. The researchers assumed that if people declined the flu vaccine they will know their reasons for declination.

CHAPTER II

Review of Literature

The literature was examined to determine the state of current research and data regarding the declination of the annual influenza vaccination and patient barriers related to declination. In Chapter II, the researchers will present a review of literature that includes research studies examining the HPM as well as literature that supported conduction of the current study. This review identified areas of concern regarding influenza vaccination perceptions, barriers, and education.

Conceptual Framework

In her *Health Promotion in Nursing Practice,* Nola Pender presented 11 concepts and characteristics that affect individual health practices. The concepts are prior related behavior, personal factors (divided into biological, psychological, and sociocultural), perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity-related affect, interpersonal influences, situational influences, commitment to a plan of action, immediate competing demands and preferences, and health-promoting behavior. The section on personal factors is further divided into biological, psychological, and sociocultural categories (Sakraida, 2014). During the time Nola Pender was developing her theory she co-authored an article with her husband, Albert Pender, in 1980. The article, "Illness Prevention and Health Promotion Services Provided by Nurse Practitioners: Predicting Potential Consumers," provides an understanding of how the HPM was utilized by Nola Pender. A cross-sectional survey method was utilized in this study. The purpose was to determine who is most likely to utilize nurse practitioners for health promotion and disease prevention. In this article,

the research was described as a survey of 388 residents in northern Illinois. The majority of the sample was of middle-class with a mean age of 42 years. Results of the study indicated that 61% of the respondents intended to use one or more of the nurse-provided services when they became available within the community (Pender & Pender, 1980). Pender stated that the purpose of the research was threefold:

1. Determine the level of interest in using prevention and health promotion services for direct pay;
2. To identify the extent to which the study population intended to use prevention and health promotion services provided by nurse practitioners;
3. To identify the linear combination of psychological and behavioral characteristics which best differentiated between individuals intending to use health promotion services provided by nurse practitioners and individuals with no intention of using nurse-provided services. (Pender & Pender, 1980, p. 798)

The knowledge obtained from this particular research is beneficial to the success of nurse practitioners in providing health promotion services. Pender identified dependent and independent variables that would affect the outcome of the study. Possible predictors of intention to use prevention and health promotion services provided by nurse practitioners were age, years of formal education, number in household, major life change score, attentiveness to current health issues, interest in using prevention and health promotion services, number of physician services within last 12 months, number of dental visits within last 24 months, use of existing prevention and early detection services, and use of existing health education and health counseling

services. The dependent variable of intention was measured by inquiring if individuals would utilize services offered by nurse practitioners with master's level preparation for direct pay (Pender & Pender, 1980). Pender compared her research to similar studies and garnered corresponding results; however, other variables were identified that could be used in future research. The significance of age, previous health education, and existing counseling services should be considered in future research. This study was more focused on the behavioral intentions than actual behaviors, which Pender identified as a limitation to this research. Most of the time intention and action correlate, but there can be up to a 55% difference in the stability of this assumption (Pender & Pender, 1980). Nola Pender utilized this research in the development of her theory. Pender noted that emphasis on health promotion has the potential long-term benefits of extending longevity, enhancing quality of life, and reducing healthcare costs (Pender & Pender, 1980). The components of the HPM were applied and guided the framework for this research study. This was evident in how she identified the independent and dependent variables in this study. The HPM addresses health, illness, person, environment, individual experiences, cognitive behavior, and behavioral outcome. This study expanded on those key components to decipher variables that would affect a person's willingness to employ health promotion and disease prevention services offered by nurse practitioners (Pender & Pender, 1980).

The Health Promotion Model has been used as a theoretical framework for a multitude of research studies since it was originally published. Research conducted by Kelley, Sherrod, and Smyth (2009) identified that their study's conceptual framework was based on selected constructs of Nola J. Pender's revised Health Promotion Model

(Kelley et al., 2009). Kelley et al. performed a nonexperimental, quality assurance study using descriptive retrospective chart review for the purpose of evaluating whether or not smoking cessation was addressed as stipulated in American Heart Association (AHA) and American College of Cardiology (ACC) guidelines. These guidelines include standards of care by primary care providers (PCPs) with patients who smoke with a clinical diagnosis of coronary artery disease (CAD) as evidenced by acute coronary syndrome (ACS) (Kelley et al., 2009). This study was conducted in a rural area where (a) almost one third of residents 25 years and older had < 9th grade education, (b) high unemployment rates contributed to poverty, and (c) the state in which it was conducted had a high death rate from cardiovascular disease (Kelley et al., 2009). The researchers reported that rural populations are more likely to smoke and develop cardiovascular disease, so smoking cessation should be a priority of PCPs in these areas. According to the AHA, smokers have a greater than two-to-four-fold chance of developing cardiovascular disease than nonsmokers due to smoking's contribution to atherosclerosis (Kelley et al., 2009). The researchers sought to establish whether or not patients with known CAD were provided a smoking cessation intervention within one year of diagnosis. The clinic was staffed by two medical doctors and one nurse practitioner that treated 40-50 patients daily. The population utilized was a mixture of approximately 250 males and females with a history of smoking and a diagnosis of CAD as evidenced by a clinical diagnosis of ACS. A total of 150 charts met the parameters of the study and were used as the sample (Kelley et al., 2009). A researcher-developed smoking cessation chart review form was used to record the information collected. To provide further delineated patient profiles between males

and females, a Chi-square independence test was used. Final data analysis was conducted by a statistician using Statistical Package for the Social Sciences (SPSS) data software (Kelley et al., 2009). One third (31.3%) of the sample had no documentation of cessation therapy by physician nor nurse practitioner prior to or within one year of initial diagnosis of CAD as evidenced by the ACS. Kelley et al. concluded that, according to Pender's HPM, there are many factors involved in increasing prevalence of smoking cessation therapy by PCPs. In conclusion, the researchers noted the following:

1. Practice standards of care should be utilized in individuals with certain conditions, and
2. PCPs must be educated regarding related relevant facts for CAD patients and smoking cessation.

This research provides evidence that, regardless of whether patients are compliant or not, lifestyle modifications need to be a number one priority in primary prevention. In addition, smoking cessation should be addressed at every clinical visit according to the AHA and ACC guidelines (Kelley et al., 2009).

Review of Related Research

In 2016, Bahr and Benjamin conducted a study to identify factors and barriers associated with the receipt of seasonal influenza vaccine among undergraduate college students. Previous studies have shown the effectiveness of the influenza vaccine preventing against contracting the virus; however, the annual influenza vaccine rates among college students remain low. The influenza virus can be easily spread rapidly throughout students on college campuses because of close, confided spaces and the high number of students gathered on campus (Bahr & Benjamin, 2016). Despite the seasonal

influenza vaccine being available for college students, Bahr and Benjamin found that students continue to not receive the vaccine based on different barriers. Adhering to these barriers presents itself as an important issue to primary healthcare providers and public health. The apparent questions and purposes the researchers sought to achieve were identifying the factors and barriers associated with low seasonal influenza vaccination rates among college students. Bahr and Benjamin (2016) also sought to determine what attitudes and beliefs created the barrier(s) and why the students were not receiving the seasonal influenza vaccine. The setting for the study was a common student gathering location on the campus of California State University. The population consisted of undergraduate students at least 18 years of age and able to read and write in English. The sample consisted of 317 undergraduate students that met the criteria and participated in the research study. The researchers used a questionnaire to complete their study, and the time parameters consisted of a one-week period. The research participants were asked basic demographic questions and health-related questions, such as when they had last seen a medical provider, if they had health insurance, and if they had received information or encouragement from a healthcare professional regarding the seasonal influenza vaccination. The questionnaire asked participants if they had previously received an influenza vaccine. Participants were then questioned about beliefs in regard to cost, access, importance, and risks of flu vaccination. Bahr and Benjamin (2016) adapted questions regarding attitude toward the vaccine from previous studies and used this methodology to determine the barriers associated with seasonal influenza vaccination. The results revealed a low reported acceptance of the annual influenza vaccine among undergraduate students at California State University. Only

approximately 20% of participants reported receiving the seasonal influenza vaccine within the last 6 months. The only significant demographic factor associated with those who received the vaccine was year of study. The strongest health care associated factor in receipt of the vaccine related to health insurance coverage. In regard to attitudes toward the influenza vaccination, 47.8% of students believed they would actually get the flu from receiving the vaccine, 41.6% believed the vaccine would cause serious side effects, and 39.6% agreed that they did not consider themselves in danger of contracting the flu. Issues related to cost and access to the flu vaccine had the lowest percentage. Of these students, 22.4% said vaccines were too expensive, and 19.4% reported not knowing where to receive a flu vaccine. Associated characteristics, such as gender and race, were not found to be statistically significant. Freshman and sophomores were more likely to receive the influenza vaccine. Safety concerns regarding the vaccine were the most frequently reported barriers to receiving the vaccine. Findings in this study revealed that students not choosing to receive the seasonal flu vaccine have strong misconceptions about the vaccine that need to be addressed. The research outcomes supported the need for public health education regarding the seasonal influenza vaccine since education and personal beliefs presented as large barriers to the seasonal influenza vaccination uptake (Bahr & Benjamin, 2016).

The current research similarly replicated Bahr and Benjamin (2016) based on the fact that the current study examined barriers to the uptake of the annual influenza vaccine. The questionnaire used in the study was a helpful tool and was utilized in the current research questionnaire development. Bahr and Benjamin (2016) aligned with the current researchers' purpose and the significance for the research. This study

supported the fact that there is further education regarding the flu vaccine that needs to be provided to patients. The current researchers focused on why patients do not accept the influenza vaccine and their perceptions or reasoning behind declining the vaccine. The current researchers utilized the previous research by Bahr and Benjamin (2016) to build evidence for practice and provide the foundation for further research.

In 2013, Kung performed a study for the purpose of improving influenza vaccine uptake by examining beliefs, knowledge, and attitudes among healthcare professionals. It is recommended that healthcare personnel receive the influenza vaccine to maintain health, availability of staff and to prevent transmission of sickness to patients. The Joint Commission requires that healthcare facilities offer the flu vaccine to all healthcare personnel. However, healthcare personnel vaccination rates remain below goal (Kung, 2013). The significance of this study was to increase vaccination uptake among healthcare professionals. The apparent questions and purpose Kung sought to achieve were if healthcare personnel's individual characteristics, beliefs, knowledge, and attitudes affect whether or not the healthcare personnel received the annual flu vaccine. The three key constructs the researchers used to assess vaccine included behavior beliefs, normative beliefs, and control beliefs. Behavior beliefs assessed beliefs about the likely outcome of the participant's behavior and an evaluation of these outcomes. Normative beliefs assessed external expectations, such as social pressure or subjective normal that affect behavior. Control beliefs assessed factors that facilitate or prevent performance of the targeted behavior. Additional knowledge, attitudes, and individual characteristics that are not particularly explained by the three constructs from the theory of planned behavior were examined to

understand their influence on vaccination uptake as well. The study was carried out in a southern state university health center. The population consisted of 115 healthcare personnel employees of the health center, and the sample consisted of all employees between the ages of 18 and 64 years. Kung (2013) used a survey to collect data. Questions were included to assess immunization status for the current and prior influenza season and to assess individual characteristics, beliefs, knowledge, and attitudes regarding the influenza vaccine. Kung discussed the findings by section for each construct of the theory used to form the research questions and purpose of the study. Behavior belief questions were asked to examine differences in vaccination behavior. This section of the survey included questions regarding perceptions and behaviors toward receiving or rejecting the vaccine and the vaccine's purpose and effectiveness. When all questions regarding behavior belief were analyzed, a difference was found between those who received a flu vaccine and those who did not receive a flu vaccine. The findings revealed that staff members who selected these barriers were less likely to receive an influenza vaccine. The normative construct belief questioned whether or not the vaccine was recommended or received by experts, supervisors, healthcare providers, coworkers, or family members. The only question in this construct that showed a significant difference between those who received and rejected a vaccine was an expert recommendation. When all normative belief construct questions were analyzed, significant differences were found between participants who received a flu vaccine and those who rejected a flu vaccine. The normative belief of the influenza vaccine positively influenced influenza vaccine uptake. When analyzing the control belief questions, convenience of the influenza vaccination process and a free

vaccine positively influenced vaccine uptake. Control belief showed a statistical difference between those who received a vaccine and those who rejected the vaccine. The questions assessing knowledge, attitudes, and behaviors confirmed that levels of knowledge regarding the influenza vaccine are strongly associated with vaccine receipt. Participants that received a flu vaccine were more knowledgeable than those who did not receive the flu vaccine. The statistical findings of this study were consistent with existing literature suggesting that individual factors such as considering oneself at risk, listening to expert recommendations, and having access to free and convenient vaccines positively influenced influenza vaccine uptake. The findings also suggested that believing the vaccine is important to receive may be more influential on the uptake of the vaccine than the cost and convenience of the vaccine. Kung (2013) suggested future research to evaluate the sensitivity and reliability of the three-question screening tool used and educational methods that are most effective to improve vaccine uptake rates.

Kung's (2013) study revealed findings and suggestions that can be beneficial to the student researchers' current study. The current researchers' study will provide a good foundation to continue to build research on this topic. This research can build on the recommendation for evaluating the reliability of educational methods that are most effective in increasing influenza vaccine uptake. The findings of Kung (2013) suggested that more education is needed regarding the influenza vaccine to patients. The current research study addressed vaccine education along with other factors in determining why patients decline the influenza vaccine.

Cheung, Wang, Mascola, Amin, and Pannaraj (2015) performed a cross-sectional survey to ascertain parental perceptions of influenza illness and influenza

vaccinations and to determine predictors of consent for school-located vaccination (SLV) programs in urban Los Angeles County schools over two influenza seasons. This study was developed at the time of the H1N1 flu pandemic in 2009. These researchers attempted to address barriers to vaccination and predictors of future compliance of vaccination in hopes of preventing future outbreaks of influenza. Cheung et al. hypothesized that instituting school-located vaccination programs has potential to increase vaccination rates among some urban children. Providing influenza vaccines to children while at school increases access, flexibility, and convenience. Consent forms were used to obtain parental permission to perform the vaccination. Children were immunized during school hours, and a parent did not have to be present. However, a major obstacle within this program was obtaining parental consent. The researchers, therefore, attempted to ascertain perceptions and predictors that affect obtaining this consent. Cheung et al. developed their study on the heels of the 2009 pandemic H1N1 outbreak which fueled an interest in influenza and vaccination rates. Cheung et al. used the HBM to develop a 2-year study. The researchers stated that a parent's decision to vaccinate his or her child is based on perceptions regarding the child's susceptibility and severity of disease as well as risks and benefits of the vaccine. Using a take-home survey, parental attitudes were assessed using a 3-point scale with an *I don't know* option. Preference of injection or nasal spray, consent status, last year's immunization status, and socioeconomic demographics were also assessed in the survey. Cheung et al. (2015) designated 8 elementary schools in Los Angeles County that had health department-instituted school located vaccination (SLV) programs for their population in year 1. The second year 4 schools had SLVs in place and 4 did not.

Students of interest were in grades pre-kindergarten to eighth (between the ages of 5 and 13 years). Surveys were sent home to all families in their preferred language (e.g., English, Spanish, Chinese, Vietnamese) in September 2009-2010 (year 1) and 2010-2011 (year 2). Included with the surveys were vaccine waivers and educational material regarding influenza and vaccination. Teachers collected the surveys as they were returned. If surveys were not returned, they were sent out an additional 3 times with one personal phone call and 3 automated calls to remind parents to return the forms. As previously mentioned, a large obstacle to the SLV programs was obtaining parental consent. To evaluate this aspect through the tool designed for the survey, the researchers considered a *yes* answer to the question, "If flu vaccine is offered at your child's school, would you consent for your child to receive vaccine at school?" in the schools without SLV programs the same as a signed consent in the schools with the SLV programs established. Using statistical analysis in SPSS, inferences were deduced. A multivariate logistic regression model was used to determine predictors of consent. The surveys from the first year revealed a similar perception regarding influenza susceptibility among all races. However, families of Hispanic descent were less likely to recognize that influenza can cause serious complications and infections (59.7% vs. 78.0%, $p < 0.001$) or that the vaccine prevents such illness (74.5% vs. 87.9%, $p < 0.001$) compared to non-Hispanics. During multivariate analysis, lack of college education among parents and the child's previous vaccination history remained significant predictors of consent for influenza vaccination at school (83.6% vs. 61.5%, $p < 0.001$). Also, injection and nasal spray vaccines were equally preferred (injection, 48.3%; nasal spray, 49.8%). Second-year surveys revealed very similar results to the first year. The

statistics continued to show that Hispanics, compared to non-Hispanics, were less likely to recognize the serious complications (58.9% vs. 75.1%, $p < 0.001$) of influenza or that the vaccine could prevent illness (73.5% vs. 84.8%, $p < 0.001$). College-educated participants were slightly less likely to perceive the benefit of vaccination (75.5% vs. 80.8%, $p = 0.038$) and significantly more likely to perceive the risks (81.1% vs. 60.6%, $p < 0.001$). During multivariate analysis, significant predictors of vaccination consent were disease susceptibility, vaccination benefit, lack of college education, and previous vaccination status. Respondents in year 2 preferred the nasal vaccine versus the injection (63.1% vs. 36.9%, $p < 0.001$). Cheung et al. (2015) further analyzed data to determine changes between years 1 and 2. Significant decreases were found in perceived season susceptibility (73.4% vs. 66.8%, $p < 0.001$) and severity (70.0% vs. 65.2 %, $p < 0.001$) and perceived benefits (81.6% vs. 77.6%, $p < .001$). However, a rise in the number of parents who consented to the vaccine or would have consented to the vaccine if an SLV program was in place in their school was larger in year 2 (26.1% vs. 21.0%, $p < .001$). Interestingly, the number of parents who were vaccinated for influenza as a result of the study increased in both years, but more so in year 2 (69.1% vs. 52.1%, $p < 0.001$). Vaccine safety has been a major predictor among educated parents in many studies noted by the (Cheung et al., 2015). Parents with professional jobs tend to have better healthcare and more resources available to them to research, e.g., the internet and media. However, not all of these sources are reliable. Many misconceptions and misinformation can be obtained and not everyone is capable of discerning reliability among the media. For future studies, the team recognized the need to educate on dependable sources of vaccination information and to give

pamphlets aimed at risks and side effects in an attempt to address the concerns of this population (Cheung et al., 2015).

Cheung et al. (2015) addressed the main areas of concern noted in the current study. Primarily, why do parents choose to decline the influenza vaccine? These results helped the current researchers in identifying new perceptions and with designing a tool to assess those perceptions. Furthermore, the study identifies a need to further educate about immunization side effects and adverse reactions in hopes of improving perceptions. The topic of immunizing is broad with many dynamics that require further studies to succinctly identify perceptions as well as predictors (Cheung et al., 2015).

In 2017, Hilyard, Quinn, Kim, Musa, and Freimuth conducted a study to better understand parental decision-making about vaccination and factors that influence parental acceptance of vaccines. During the H1N1 flu pandemic in 2009-2010, children were given priority for vaccination along with other high-risk groups. Despite the seriousness of the situation and the priority given to children, the vaccination percentage hovered around 40%. Hilyard et al. stated that this percentage was alarming given the priority assigned to vaccinating this group. For instance, in 2009-2010 H1N1 vaccines were given to children free of charge at local health departments and promoted by the media and the federal government. Despite availability and affordability, parents were still not vaccinating. Hilyard et al. (2017) attempted to address factors of influence and acceptance that influence parents in their decision-making. Campaigns against vaccination impact parents by giving enough doubt about safety to prevent parents from vaccinating. For some parents, the risk of contracting the disease was less than the perceived risk of potential vaccination side effects (Hilyard et al., 2017). The

researchers took findings from these studies and extended the research by examining them in a more urgent environment, the 2009-2010 H1N1 pandemic, and evaluated them using the HBM. The final research question was, "What is the relationship or interaction between all the variables in the model in predicting a parent's behavioral intention to vaccinate a child?" Using the HBM framework, Hilyard et al. (2017) proposed a model to explain parental decision-making related to H1N1 vaccination and suggested practical application of the results. The study design was a nationwide survey conducted from January 22, 2010, to February 1, 2010. A random sample of 2,042 adults in the United States was drawn from a panel of approximately 40,000 individuals recruited by random-digit-dialing. Some oversampling was done in the African American and Hispanic communities. Approximately 40% of the respondents were white or non-Hispanic. The remaining 60% were African American or Hispanic. Respondents were between the ages of 18 and 95 years. Of the sample, 684 were parents of children younger than 18 years old, which was the area of interest of the current researchers. These 684 were further divided into parents who vaccinated at least one child with H1N1 vaccine and those who did not vaccinate. The survey instrument contained 80 questions and 350 individual items covering a variety of issues important to public health providers. Of these items, 26 corresponded to the HBM including perceived susceptibility, perceived severity, perceived costs and benefits of receiving the H1N1 vaccine, and perceived self-efficacy. Analysis of the data took place in three phases. First, descriptive statistics were examined to look for differences between the groups. Secondly, a k-cluster analysis of the 12-item list of possible costs and benefits associated with the H1N1 vaccine was performed to identify homogenous groups

(clusters) of respondents. The final stage used structural equation modeling to test the HBM controlling for demographics and health insurance. Overall, the descriptive statistics revealed that in parents with children younger than 18 years ($n = 684$) 62% vaccinated none of their children, 31% vaccinated all, and 7% vaccinated some. Parents of children with unspecified underlying health conditions were more likely to vaccinate than those without (49% vs. 35%, $p = 0.009$). Hilyard et al. (2017) revealed data similar to other studies in that percentages of vaccinated children were no different between parents with insurance and parents without insurance. However, there was a strong relationship between uptake and knowledge as well as between uptake and media consumption. As far as younger parents were concerned, practitioners were influential. An additional significant factor was educational level. Across the board, parents with a high school or less education were more likely to vaccinate their children than parents with some or more college (47% vs. 29%, $p < 0.01$). Interestingly, when data were further analyzed by the demographic race, Hispanics had the highest perceived susceptibility, perceived severity, and cues to actions when compared to African Americans and Caucasians. These items are noteworthy; however, they did not show statistical significance in vaccine uptake overall. When Hilyard et al. (2017) analyzed items from the HBM, cluster groups showed statistical significance and were more likely to predict vaccine behavior. Cues to action were the most significant in predicting parental acceptance with cost and benefits and self-efficacy playing a role also. The analysis showed significant differences between clusters with low (worried about neither disease nor side effects), medium (worried about the vaccine but not the disease), and high (worried about the vaccine and disease) concern for vaccine safety.

The worried, or high, cluster group was 73% more likely to vaccinate their child when compared to the other clusters. Overall, the cost-benefit cluster and the cues to action cluster analysis explained 30% of the variability in self-efficacy. Cues to action were significant positive predictors of self-efficacy. A significant negative predictor was the worried cluster in the cost-benefit cluster. The study showed a 1.3 time increase in vaccination for every increase in standard deviation in self-efficacy. Cues to action significantly affected the perceptions of the high (worried about both disease and vaccine) and the medium (worried about the vaccine and not the disease) cluster but showed little effect on the low cluster (those averse to the vaccine). Hilyard et al. (2017) stated an area of further research was to analyze factors that might affect those averse to the vaccination. However, for the purposes of this research, efforts might be better spent in focusing on the respondents in the high and medium clusters as it is harder to change the perceptions of the averse. Quicker results may come from focusing on those groups more apt to change behavior to ultimately boost influenza vaccination rates.

The results of Hilyard et al.'s (2017) study were not directly related to the current study in that these data involved perceptions regarding uptake of the influenza A vaccine (H1N1) and the current research study involves the seasonal influenza B vaccine. However, the perceptions and influences attached to a flu vaccine for children, whether A or B, are very similar in that the bottom-line decision lies with a parent or guardian. The current research utilized Hilyard et al.'s study by taking and applying their recommendation of analyzing factors that might affect those averse to the vaccination. The current researchers further built on the factor of specific barriers and

perceptions that cause parents to decline the annual influenza vaccination for their children (Hilyard et al., 2017).

In 2012, Albert, Norwalk, Yonas, Zimmerman, and Ahmed published an article in *BMC Family Practice* entitled, "Standing orders for influenza and pneumococcal polysaccharide vaccination: Correlates identified in a national survey of U.S. primary care physicians." In 2014, Albert et al. expanded their research in collaboration with three more researchers on an article published in the *Journal for Healthcare Quality* entitled "Success of the 4 Pillars Toolkit for Influenza and Pneumococcal Vaccination in Adults."

In the article published by *BMC Family Practice,* the researchers stated that the U.S. Advisory Committee on Immunization Practices (ACIP), the Task Force for Community Preventive Services, and the Southern California Evidence-Based Practice Center-RAND have all endorsed SOPs to reduce missed opportunities and raise vaccination rates, yet SOPs are not commonly used in the outpatient setting (Albert et al., 2012). Research outside the U.S. is minimal or scarce; however, the use of SOPs in foreign countries suggests effectiveness in increased vaccination rates as well. Additional studies suggested that the lack of SOPs or another form of implementation contribute to missed opportunities in vaccinating the elderly. Low reporting of use of SOPs and decreased adult vaccination rates suggest barriers to SOP implementation. Albert et al. (2012) formed an hypothesis that the implementation of SOPs allowing non-physician medical staff to assess eligibility and administer vaccines without a specific physician's order will increase vaccination rates.

Albert et al.'s (2012) study was conducted through the use of a mailed survey to physicians selected from a sample of the American Medical Association's (AMA) master list of outpatient-based family physicians. The population sampled was 820 family physicians and 820 general internists. The survey mailed was signed by representatives of the CDC, the AMA, and the principal investigator; and a $5.00 cash incentive was attached to complete the questionnaire (Albert et al., 2012). Respondents were asked to return questionnaires, and non-respondents received second mailed surveys approximately 8 weeks after the first. If no response, then non-respondents were contacted by phone and asked to participate via telephone. Exclusions included physicians no longer in primary care practice, those who did not immunize, those who did not treat adult patients, or those who did not answer questions pertaining to influenza vaccination or PPV (Albert et al., 2012). Albert et al. (2012) stated that the questionnaire consisted of 22 close-ended questions and covered the following: (a) demographics; (b) practice characteristics; (c) awareness, agreement, and use of SOPs for adult immunizations; (d) barriers to and facilitators of SOPs; and (e) physician attitudes regarding SOPs. It was pilot-tested with several local primary care physicians and revised as appropriate. Following analysis, Albert et al. (2012) stated that nationally, in primary care physicians that treat adults, 23.1 % reported using SOPs consistently for both flu vaccine and PPV, and 19.9% used SOPs only for influenza vaccinations. In total, 43% of physicians reported consistent use of SOPs for flu vaccine. Albert et al. (2012) found that the hypothesis was statistically supported by physicians agreeing that SOPs are an effective way to boost vaccine coverage. Weaknesses of the study were identified. First, the survey covered many correlates of

SOP use but may not have caught all relevant correlates. The study relied on only one physician to report on each practice, so there may have been an underestimated variance in delivery of vaccinations. However, strengths included that the research encompassed a survey that was national in scope and captured a high response rate for physician participants, with the questionnaire being based on theoretical models designed around physician adoption of vaccines (Albert et al., 2012).

This study could be used successfully in the current study for multiple reasons. The basis for the study was to identify factors that decrease or increase consistent use of SOPs. Other studies have illustrated that use of SOPs increases vaccination rates. At least two of the current studies' research questions were addressed. The current researchers were able to examine provider-based attitudes toward the adoption of SOPs and willingness to establish them as an intervention to increase vaccination compliance.

In the article published by *Journal for Healthcare Quality* just 2 years later, the development and implementation of the "4 Pillars Toolkit" was described. Nowalk, Albert, Ahmed, and Zimmerman utilized their previous research to provide further evidence-based practice in regard to vaccinations. By collaborating with Nolan, Nutini, and Susick, they were able to develop and evaluate the toolkit to assist primary care practices with adoption of an immunization standing order programs (SOPs) for the purpose of and resulting in increased adult vaccination rates. This study was conducted through a triangulated, mixed methods approach that utilized three different strategies. The researchers collected qualitative data through observation; they performed a survey and extracted vaccination rates from the electronic medical records at four different

practices to evaluate the use and level of implementation of the toolkit by site staff (Nowalk et al., 2014).

Nowalk et al. (2014) identified one hypothesis in which they stated that the use of the 4 Pillars Toolkit was associated with improvements in adult vaccination rates. Nowalk et al.'s study was conducted in four primary care practices. All were in urban settings and varied by size and demographics of the patients. One practice was a faculty practice; the other three were community-based. Initially, a lead physician or officer manager was contacted by the Principal Investigator, and agreement was obtained to adopt the toolkit along with appropriate office changes. Secondly, a presentation was given to the staff and physicians of the participating clinics between June and September 2011, and the toolkit was explained. Printed copies were given to each staff member of the 4 participating practices and made available on a website. Encouragement of use was given with suggestions on how to adopt or develop ways to incorporate the toolkit within the practices, especially the SOPs along with strategies to increase vaccination rates. Qualitative data were collected at each site from staff in the form of operations observation by a medical anthropologist and interviews about how SOPs had been incorporated, followed by debriefings in April and May 2012 evaluating the use of field guides, staff's acceptance, and implementation of the toolkit. Additional data were gathered from staff at each site by performing a survey in March and April 2012 and gauging the extent of how the toolkit was being implemented by asking staff to report which strategies or interventions they used from the toolkit to increase adult immunizations. Lastly, data were gathered by vaccination rates being tallied from the electronic medical record (EMR) regardless of where active patients reported that the

vaccinations were received. The EMR was used to determine demographic data and vaccination status with active patients being defined as having a visit in 2010 for year 1 and 2011 for year 2. All active adult patients (ranging from 453 in Site 1; 1,021 in Site 2; 1,910 in Site 3; and 2,208 in Site 4) comprised the denominator for influenza vaccine. The numerator consisted of those active patients vaccinated between August 1 and February 28 or 29 each year.

Nowalk et al. (2014) summarized the results from the surveys in the following way. The majority of staff at the sites believed the toolkit improved efficiency for adult vaccinations with Site 1 using the least amount, Sites 2 and 3 using intermediate, and Site 4 using the most strategies from the toolkit. Influenza vaccination rates were significantly improved in younger and middle-aged adults in Sites 2, 3, and 4. Flu vaccines also increased amongst older adults at Sites 2 and 4. No improvement was noted in Site 1. There was an increase in influenza vaccinations from 22% during pre-intervention (2010-2011) to 33% in the intervention year (2011-2012). This increase was reflected throughout all sites and ages (Nowalk et al., 2014).

Nowalk et al. (2014) highlighted several weaknesses in the study. The sites which were chosen had historically low adult vaccination rates. Therefore, response to the toolkit may have differed in sites where rates were initially higher. In addition, all the sites used the same EMR, and it is unknown how well the toolkit would have been utilized in practices without EMRs. However, practices not using EMRs were predicted to continue declining. This study was used successfully in the current study for multiple reasons. The basis for the study was increasing efficiency and rates of adult influenza vaccinations—the same topic for which the current researchers collected data.

At least three of the current study's research questions were addressed. The current researchers were able to examine clinic-based interventions to increase flu vaccine rates and willingness to adopt or the feasibility of establishing interventions that will increase compliance in flu vaccination (Nowalk et al., 2014).

This study by Nowalk et al. (2014) was used successfully in the current study for multiple reasons. The basis for the study was increasing efficiency and rates of adult influenza vaccinations which was the same topic for which the current researchers collected data. At least three of the current study's research questions were addressed. The current researchers were able to examine clinic-based interventions to increase flu vaccine rates and willingness to adopt or the feasibility of establishing interventions that will increase compliance in flu vaccination.

The purpose of the study by Pless, McLennan, Nicca, Shaw, and Elger (2017) was to investigate the reasons nurses decline the influenza vaccination. For this study, Pless et al. chose to further explore the reasons for declining the influenza vaccine—specifically for nurses by doing qualitative interviews. Pless et al. expected to gain information on this subject by allowing the nurses to discuss their experiences and opinions on why they decline the vaccine. For this qualitative research, "non-vaccinated participants were recruited from several nursing departments in two teaching hospitals in the German speaking part of Switzerland" (Pless et al., 2017, para. 4). Additional nurses joined in this very small study after hearing about it from co-workers with only 18 nurses being interviewed. To ensure that the nurses interviewed for the actual study were from a range of fields or positions and had varying experience, purposive sampling was utilized. "Participants' work experience ranged from 1-37

years. Nurses worked in six different units with high-risk patients (hematology, cardiology, nephrology, geriatrics, ICU, oncology) and held various hierarchical positions" (Pless et al., 2017, para. 8). Interviews began in the Spring of 2012 and were concluded by late Fall of the same year. Anina Pless, who is fluent in Swiss German, conducted the interviews in Swiss or High German per each interviewee's preference. The 30-minute interviews were recorded and later translated using High German dictation. The actual analysis of the study was via the translated dictation of the interviews. Using conventional content analysis, Pless et al focused primarily on common themes.

The findings of the study listed "maintaining a strong and healthy body," "protecting decisional autonomy", and "perception of an untrustworthy environment" as the main recurring theme among the nurses interviewed. Of those interviewed, "nearly all of the nurses expressed the belief that influenza did not pose a threat for them since they were healthy, did not belong to the high-risk population, and had never before fallen ill with influenza" (Pless et al., 2017, para. 11). In regard to protecting their autonomy, nurses expressed that they did not want to be pressured into medical decisions by their supervisors. The nurses also expressed concern over the effectiveness of the vaccine. Information gleaned from the interviews revealed that there is a "lack of trust in the efficacy and safety of the influenza vaccine itself or a lack of trust in those individuals or health authorities promoting and selling the vaccine" (Pless et al., 2017, para. 21). The authors of this research felt that these three main themes were not three different reasons entirely, but rather are connected. Pless et al.'s

interpretation is that the nurses' desire to maintain a healthy body is important due to being immersed in an environment that they do not completely trust.

One of the main weaknesses of this study was the very small sample size. Pless et al. (2017) could have had more impact had they utilized a much larger sample size. Another weakness was the possibility of bias. The nurses that were interviewed could have possibly been more opinionated on this topic. The interview process was a strength to this type of qualitative study because instead of the focus being on how many nurses decline the influenza vaccine, there was considerable emphasis on the reason behind their decision. Another weakness of this study would be the validity of the information. Only one researcher conducted the interviews, and she was the same person who translated and transcribed them. The researchers noted that they did not have any external sources utilized to validate the translations (Pless et al., 2017). This study provided some insight into how to go about finding the reasons and had valuable application properties to the current research study.

Moran et al. (2017) performed a quantitative study on Hispanic women to investigate the individual, cultural, and structural predictors of feeling confidence in the safety of the influenza vaccine and taking the influenza vaccine. The Hispanic population is very diverse, but, as a group, they are less likely than non-Hispanic whites to take the influenza vaccine. This study was significant because the Hispanic flu vaccination rate was lower than the national average. There is little documented information for the reason the vaccination rate is lower in this population, and Moran et al. (2017) reported that it is the first study of its kind. The research question of this study was to ascertain what factors contribute to influenza

vaccination acceptance among Hispanic women in the United States. Moran et al. wanted to identify the structural, cultural, and individual-level correlates of confidence in vaccine safety and the actual vaccine rate among each Hispanic subgroup. They chose women because Hispanic women often have the greatest influence on the health care of their families. The influenza vaccine is recommended for people over the age of 6 months yearly by the Advisory Committee on Immunization Practices, yet less than half of adults took it during the 2013-2014 season; in the Hispanic population, that number was even lower. Data for this study were collected from April 2012 to December 2013. To be eligible to participate in the study, the participants had to be female, Hispanic, and between the ages of 21 and 50 years. Women from clinics and community sites in Los Angeles County volunteered to participate. A total of 1,565 women participated in the study. The participants had to answer the question about where they were born to continue in the study. An interviewer gave the survey, which lasted between 45 and 60 minutes. The participant decided if the survey was given in English or Spanish. The women received a $20.00 gift card for participating. The university Institutional Review Board approved the methodology of the study. Participants were asked how often they took the influenza vaccine. Those who answered *almost always* or *always* were coded as regularly receiving the vaccine. Those who answered *never*, *rarely*, or *sometimes* were coded as not regularly receiving the vaccine. The women were asked to rate how they felt about the statement, "Vaccines are safe." There was a 6-point scale from *strongly disagree* to *strongly agree*. The participants who chose *strongly agreed* or *agreed* were coded as a '0' to indicate they were confident that

vaccines were safe. The women who chose *somewhat agreed, somewhat disagreed, disagreed*, or *strongly disagreed* were coded a '1' to indicate they were not confident in the safety of vaccines. Household incomes were reported in increments of $10,000. The participants reported their highest level of education and this was coded. They also reported their age and how many years they had been in the United States. They rated their overall health and if they agreed or disagreed with the statement, *you avoid seeing your doctor because you fear you may have a serious illness*. This was rated on a scale of 0 to 5 and measured fatalism. Participants were asked how often they went to church or religious services from *never* to *more than once a week*. These were scaled from 0 to 5. The women were asked if they had health insurance. Their health literacy was assessed using Chew and colleagues' validated measure. It had participants rate how confident they were with filling out medical forms by themselves. These data were analyzed using SPSS 17.0, a statistical software. The results of the study were varied overall but indicated that factors predicting confidence in influenza vaccines and influenza vaccination rates varied by Hispanic sub-groups. For example, for the women born in the United States, vaccine safety confidence and having insurance were key factors in getting vaccinated. For the women born in Guatemala, education and income primarily influenced if they got a flu vaccine. Overall, confidence in vaccine safety did present as a significant factor of flu vaccination among the majority of the groups included in the study. Moran et al. (2017) also highlighted that the Hispanic population in this study had diverse sub-populations. The implications of the research outcomes to the body of science as identified by Moran

et al. (2017) was that healthcare providers trying to increase the flu vaccine rate should be cognizant of the diversity of beliefs and the barriers this diversity can sometimes present. Health professionals can educate specific groups differently to work to increase the vaccination rate. By using the culture-centered approach to study the individual as well as structural and cultural level determinants of flu vaccination, Moran et al. (2017) illuminated that there are differences in health behavior among the groups of the Hispanic population. The country of origin appeared to be a factor in these variances. Targeted and culturally specific interventions could have a greater impact on the vaccination rate. Moran et al. reported this study also adds to existing information that vaccination education impacts whether or not a person gets vaccinated. There were no specific recommendations for future research, but Moran et al. (2017) reported there was not a lot of information about this particular group and flu vaccination, so it could be implied that more research on this subject would add to the understanding of flu vaccination rates among Hispanic women. Moran et al. mentioned that interventions to address specific populations according to their culture could have a significant impact on the flu vaccine rate. The current research study was influenced by this information. One of the research questions in the current research was, "why are patients declining the flu vaccine?" This study addressed that with a very specific population. The current study will compare results with the population in the researchers' area but will include various ethnic groups. The current researchers built on this research by including a more diverse population (Moran et al., 2017).

Asma et al. (2016) performed a quantitative study in the form of a questionnaire to assess the determining factors for healthcare providers getting the influenza vaccine with the overall goal of promoting increased vaccination rates of healthcare providers and the population as a whole. Doctors and nurses that work in hospitals are exposed to the flu frequently. They are also taking care of immunocompromised patients. Increasing the vaccination rate among these healthcare providers can reduce the transmission to inpatients. A healthcare provider is in a position of significant influence. If a doctor or nurse does not feel strongly that the influenza vaccine is important, his or her education and encouragement toward patients to get the vaccine will be lacking. If the perspectives of doctors and nurses regarding the flu vaccine can be understood, methods to increase the rate in which they are vaccinated can be developed and can directly influence the general population. No theoretical framework for the study was identified. The research question was as follows: What factors affect the rate of vaccination with the influenza vaccine for healthcare providers, specifically doctors and nurses? Asma et al. (2016) wanted to know the attitudes and reactions providers have toward the influenza vaccine. These researchers felt that, if they can identify these factors, they can focus future education and strategies there and influence healthcare providers to get the vaccine.

The study was conducted from January 1, 2015, to February 1, 2015. Five university hospitals in southeastern Turkey with 1,220 physicians and 1,650 nurses were emailed the questionnaire three times. The first part of the questionnaire was multiple-choice and covered the demographic information of the participant as well as how long the participant had worked in health care and where they worked. The second

part of the questionnaire had questions regarding the influenza vaccine that were rated on a scale of 1-5 with 1 as *strongly agree* and 5 as *strongly disagree*. There were 50 questions in this section regarding the believed risks, benefits, barriers, attitudes, motivating factors, self-efficacy, and social effects of the influenza vaccine. The participants were grouped as either regularly getting the flu vaccine or being non-compliant. If they had never gotten the flu vaccine or had only gotten it once, they were placed in the noncompliant group. Univariate and multivariate analyses were utilized. Data were analyzed using SPSS software 21.0. Of the 2,870 healthcare professionals that were emailed the questionnaire, 642 responded, or approximately 22%. Fourteen people were excluded because they did not answer the question about their personal vaccination habits. Physicians made up 15.2% of the participants who were vaccine compliant, and nurses made up 8.2% with the ratio of vaccine compliant providers equaling 9.2%. More internal medicine providers got the flu vaccine at 53.4%. Surgery was next at 25.9%, followed by intensive care at 10.3%, emergency room at 5.2%, and then other at 1.7%. The vaccine compliant group was comprised of 51.7% female. The noncompliant group was 66% female. The median age of the vaccine compliant group was 35.5 years while the median age of the noncompliant group was 26.0 years. The physicians represented 48.3% of the vaccine compliant group and only 26.1% of the noncompliant group. The median years worked in healthcare of the compliant group was 13.1 years while the noncompliant group only had a median of 6.5 years of experience in the healthcare field. Of the compliant group, 12.1% of the participants had a chronic disease. The noncompliant group had 2.3% with a chronic disease. Of participants living with an individual > 65 years old, 37.9% were in the vaccine

compliant group, and 21.4% were in the noncompliant group. Per multivariate analysis, having a chronic disease requiring vaccination increased the vaccination rate by 5.13 times. Believing that other healthcare providers felt vaccination was important increased the vaccination rate by 3.45 times. Feeling that the influenza vaccine was effective increased the vaccination rate by 6.31 times. Believing that natural therapy for flu prevention is superior to the influenza vaccine decreased the vaccination rate by 0.38 times. Thus, being male, increased age, increased years working in health care, working in the internal medicine group, living with someone older than 65 years, and having a chronic disease all increase compliance with influenza vaccine. One finding noteworthy was that a significant percentage of all of the participants felt that the flu vaccine can cause the flu and side effects—though both are unlikely. The variety and quantity of questions used in this study allow good information to be assessed in an unbiased manner. Several questions were included in each category of perceived risk, perceived benefit, perceived barriers, motivating factors, attitudes, social effects, and personal competence. The required demographics were specific yet extensive. The statistical analysis was very thorough—looking at the data from multiple angles. The current researchers implemented similar processes in the current study. Because healthcare professionals are influential and impact the rate of vaccination, understanding why a doctor or nurse chooses to get vaccinated or not will help healthcare providers understand why the general population makes that same choice. The statements the participants rated in this study, "I had side effects from my previous influenza vaccinations" and "My relatives believe that my vaccination is important" were factored into the current study. Asma et al. (2015) reflected that the rate of

vaccination against the flu has many factors and is a complex issue. Asma et al.'s study assisted the current researchers in developing strategies with the ultimate goal of increasing the influenza vaccination rate.

Nyhan and Reifler (2015) conducted a nationally representative survey experiment to assess the public's belief that the flu can be contracted from the influenza vaccine by further examining the prevalence of this belief. In addition, the study also tested whether or not correcting this myth reduces belief in the misperception, increases perceptions that the flu vaccine is safe, and increases vaccination intent. The effect of corrective information with an alternate message about the dangers of flu as well as a control condition in which respondents were not given any information was compared. The purpose of this study was to explore four ideas. The first idea was to determine how prevalent is the myth that the influenza vaccine can give a person the flu. Secondly, the study attempted to determine if giving corrective information regarding the flu vaccine reduces the perception in the previously stated myth. Thirdly, it looks to determine if this corrective information, in turn, increases the perception that the flu vaccine is safe. Lastly, the study sought to determine if corrective information increases the patient's intent to receive the flu vaccine. Data were collected for this study by survey in two parts. Data were collected as part of the 2012 Cooperative Congressional Election Survey—a pre-election wave and post-election wave for respondents from the first wave. There were 1,000 respondents in the first wave, and 822 accepted the invitation to complete the second wave. Respondents were randomly assigned to one of three different conditions in the experiment. In each condition, respondents were questioned regarding the flu vaccine and their intent to receive

vaccination. Group 1 received corrective information regarding the flu vaccine and how it is not contracted from the flu vaccine. Group 2 received information about the risks of the flu. Group 3, the control group, received no additional information about the flu or flu vaccines. Each message that was given to the first two groups was taken nearly verbatim from the CDC. Respondents answered surveys on a 5-point scale ranging from *not at all concerned* to *extremely concerned* when asked the question, "In general, how concerned are you about serious side effects from vaccines?" prior to receiving the corrective information or flu risk information. Eleven percent of the sample answered that they were *extremely concerned*, and 13% were *very concerned.* This percentage was deemed the high-concern group, and the remaining percentage was classified as the low-concern group. The belief was that the high-concern group would be more likely to resist corrective information intended to decrease flu vaccine concerns. After the experimental interventions of corrective information and risk information, respondents were asked whether the statement, "You can get the flu from the seasonal flu vaccine," is accurate. The following questions were also posed: "Just based on what you know, how safe do you believe the flu vaccine to be?" and "How likely is it that you will get a flu vaccine for the seasonal flu for the upcoming flu season?" Respondents answered on a 4-point scale. The results indicated that randomization was successful. Results indicated that > 4 in 10 Americans believe the misperception that the flu vaccine can give you the flu is "somewhat accurate" (31%) or "very accurate" (12%). A smaller portion of the sample held the belief that the vaccine is unsafe (12% say "not very safe," 4% "not at all safe"). The self-reported likelihood of receiving the vaccine were as follows: 34% say they are very unlikely to get a flu

shot, and 37% say they are very likely, while the remaining 29% were less certain. Experimental results regarding flu vaccine beliefs suggested that correction was generally successful in reducing false beliefs about the flu vaccine. Experimental results regarding intention to get the flu vaccine indicated that neither intervention had a significant effect on the intent to vaccinate on the sample as a whole or the low side effects concern subgroup. Interestingly, what was discovered was that correction had an opposite effect on the high-concern side effects subgroup. Correction intervention decreases the reported likelihood of receiving the vaccine. The high-side effects subgroup predicted probability of saying they are likely to get the flu vaccine decreased from 46% to 28% when they were told that the flu vaccine cannot give you the flu. In future research, it was suggested that participants' general attitudes toward vaccines should be considered since this study only focused on a false belief about a side effect of the vaccine. The study was applicable to the current research for several reasons. The basis of the study was to identify if correcting myths regarding the flu vaccine increases vaccination intent which is in correlation with the current research to find out if patients are being educated regarding flu vaccines. The study also looked at possible reasons why people might decline the flu vaccine, such as the belief that the vaccine is not safe. The current research also attempted to identify reasons for flu vaccine declination (Nyhan & Reifler, 2015).

Meyer and Lum (2017) used a quantitative research design to determine the reasons people give for not receiving the seasonal influenza vaccine in Ontario, Canada. This information was used in a manner to make vaccine promotion and communication more effective. Despite having the Universal Influenza Immunization Program in place

since 2000, which provides seasonal flu vaccines at no cost, only a third (34%) of the Ontario population received the vaccine in 2013-2014—a decrease from 2003 in which 38% received a vaccination. The goal was to reach what the study called *herd immunity*. In order to reach herd immunity, 80% of the healthy population and 90% of the high-risk population must receive the vaccine. Due to the complex nature of vaccine hesitancy, the Conceptual Model of Vaccine Hesitancy was used to look at all the factors involved that could influence acceptance or refusal of the vaccine. The hypothesis of this study was to determine the reasons why the Ontario population is not receiving the flu vaccine to develop a better strategy to communicate and promote vaccines. This is in response to the need to reduce rates of seasonal flu, ease the burden on the healthcare system, and protect the population through herd immunity. The sample population lived within the Waterloo Region, Ontario, were 18 years or older, and primary language was English or French. Data were collected between August and September 2014 using surveys conducted via telephone (land-line and cell phone) and web. The telephone samples were purchased from a Survey Sampler. The web-based sample was drawn from the Survey Research Centre's panel members in the Waterloo Region. Computer-Assisted Telephoning Interviewing software was used to collect data. The online survey database consisted of emails. Data were coded using the Conceptual Model of Vaccine Hesitancy. Codes included were knowledge and information, past experiences, perceived importance of vaccination, risk perception and trust, subjective norm, religious and moral convictions, public health and vaccine policies, health professionals' recommendations, and communication and media. There was also a coding added to include responses that did not fall into these

categories of hesitancy. In addition, there are more response codes than the sample number since many responses included more than one rationale. Ethics approval was obtained through the University of Waterloo Office of Research Ethics. There were 531 survey respondents, but only 304 were included in this study because they were not vaccinated for the flu the prior year. The highest percentage of the sample (46.8%) indicated that their reason for not receiving the flu vaccine was related to the perceived importance of vaccination. This portion of the sample felt as though their current health status, immune system, and age determined whether or not they should receive the vaccine. Some respondents cited that they felt the flu vaccine was for high-risk/vulnerable populations—not the healthy young population with a good immune system. In response, it was suggested that the importance of healthy individuals reducing the risk for the population by obtaining the flu vaccine be included in public health education. The second most common reasoning for declining the flu vaccine was related to Moral Convictions (19.4%). This portion of the sample cited "not believing" in the vaccine or having hesitancy regarding the effectiveness. However, none of the responses were indicative of religious beliefs but rather related to moral preferences or dissidence toward "artificial" medicine. The third most used justification for declination was related to past experiences with vaccination services (14.5%). This group either had a reaction in the past or had an unpleasant experience with the facility giving the vaccine. Aside from the top three reasons, the remaining fell into the following categories: Risk perception and trust (5.1%), Subjective norms (4.0%), and Health professional recommendations (1.6%). Responses that fell outside of the Conceptual Model were the following: Forgot/never been vaccinated (3.5%), Allergy

(2.7%), Lazy (1.3%), Unwell (0.7%), and Cost (0.4%). In future research, the Conceptual Model of Vaccine Hesitancy was recommended as a framework. In conclusion, this study identified several different explanations for patients declining the flu vaccine and correlated with the purpose of the current research (Meyer & Lum, 2017).

CHAPTER III

Methodology

The purpose of this study was to determine the barriers to the administration of the influenza vaccine and explore explanations for adults declining the influenza vaccine. Once these barriers were defined, the study utilized them to propose ideas to improve the administration quantity. Despite this being a vaccine preventable illness, the rate of vaccination remains below target (CDC, 2017b). Increasing the rate of vaccination could decrease healthcare costs, cases of flu, flu-related illnesses, and flu-related deaths. Therefore, the current researchers focused on how many are accepting the vaccine and the reasons for declining the vaccine. Once barriers to vaccine uptake are known, this study will be beneficial to primary care providers in guiding their education to patients regarding influenza vaccination. A descriptive quantitative study using Pender's HPM as a theoretical framework was used to investigate. This design was appropriate for this study because there is a limited amount of time for researchers to gather data and quantifiable data can be obtained from questionnaires.

Design of the Study

This research design is a descriptive quantitative study aimed at analyzing barriers of influenza vaccine uptake and percentage of those obtaining the vaccine. Prior to implementation of the study, approval was obtained from Mississippi University for Women's Institutional Review Board (see Appendix A). Six researchers distributed a total of 600 questionnaires to several locations chosen at random in north Mississippi. A letter of informed consent was signed by the clinic representative (see Appendix B). Data obtained from these questionnaires (see Appendix C) were

compiled using descriptive statistics to report the findings of this study. Data collection also included limited demographic data, such as age, sex, and race. Researchers used a data collection worksheet to document and compile data (see Appendix D).

Setting

This study took place in central and north Mississippi. The locations were four primary care clinics.

Population and Sample

The selected sample was chosen at random from several locations in various communities. The target population for this study was adults between the ages of 18 and 64 years. The receptionist at each clinic passed out the surveys to patients within that age range. Once the survey was completed, the patient returned the survey to the receptionist where it was placed in an envelope. The surveys were picked up from the clinics in one month. A convenience sample was utilized to obtain 600 questionnaires. Each of the six researchers distributed 100 surveys each in an effort to have a total of 600 questionnaires.

Protection of Human Subjects

Questionnaire and data collection worksheets did not contain any identifying data in an effort to maintain confidentiality and individual rights. All data gathered were from unidentified sources, thus keeping the information confidential and protected. Due to data being collected via questionnaire, the subjects were not at any risk nor would they benefit from this study.

Procedure for Data Collection

The current researchers randomly distributed 100 questionnaires to four different locations in north Mississippi. The researchers reviewed data obtained from 600 questionnaires in an effort to analyze the percentage of people that receive or plan to receive the 2017 influenza vaccine. If they did not receive the vaccine, they were asked to choose a barrier to receiving the vaccine from multiple-choice answers. The questionnaires were distributed at various locations for participants that chose to fill out the questionnaire. Participants were those who chose to fill out the questionnaire at their own discretion. The researchers recorded and compiled data on a researcher-designed worksheet. Researchers met at a prearranged date to compile and review data from the data collection worksheet.

Methods of Data Analysis

Data were subjected to analysis and reported using means and standard deviations to identify the barriers to receiving the influenza vaccine as well as the percentage of the sample that received the vaccine. A statistician was used to analyze the collected data. Percentages differentiated age, race, sex, and rationales for vaccine declination. Results were used to identify barriers to receiving the flu vaccine as well as for primary care providers to guide education to patients regarding the flu vaccine.

Data were first compiled in Microsoft Excel. Subsequent analyses were performed using IBM SPSS statistical software, version 24. Inferential statistics were tested using $\alpha = 0.05$.

CHAPTER IV

Results

Influenza is a vaccine preventable illness; yet the rate of vaccination remains below target (CDC, 2017b). Increasing the rate of vaccination could decrease healthcare costs, cases of flu, flu-related illnesses, and flu-related deaths. This study determined the barriers to the administration of the influenza vaccine and present reasons for adults declining the influenza vaccine. This study used these barriers to vaccination to propose ideas to improve the rate of administration. Increasing the rate of vaccination could decrease healthcare costs, cases of flu, flu-related illnesses, and flu-related deaths. Therefore, the researchers focused on how many are accepting the vaccine and the reasons for declining the vaccine. By presenting barriers to vaccine uptake, this study will provide primary care providers guidance in patient education regarding influenza vaccination.

Profile of Study Participants

For the current research study, six researchers distributed a total of 600 questionnaires to four clinics in north Mississippi. Participants included those individuals choosing to fill out the questionnaire at their own discretion. Data obtained from these questionnaires were compiled using descriptive statistics to report the findings of this study. A statistician was used to analyze the collected data. A total of 392 surveys were completed and returned.

The demographics were nearly evenly distributed with 50.0% (n = 196) aged 18-39 years and 48.2% (n = 189) aged 40-64 years. No age was reported for 7 respondents. More females (54.6%, n = 214) completed the survey than males (43.1%, n = 169), and

9 respondents did not report gender. The majority of respondents were insured (67.6%, n = 265), with the rest being self-pay (26.5%, n = 104) and no payment type reported (n = 23).

Regarding immunization, of the 392 respondents, 171 (43.6%) reported that they chose to receive the flu vaccine for the current flu season. The remaining respondents reported choosing not to receive the immunization (56.1%, n = 220) or did not answer the question (n = 1). Statistical analysis was performed to determine if the demographics of age, gender, or insurance status were statistically significant determinants of vaccine uptake. See Table 1 for the vaccination rates based on respondent demographics.

Table 1

Vaccination Rates According to Age, Gender, and Payment Method

	n	%
All respondents	392	43.6
Age range (years)		
18-39	196	39.8
40-64	189	47.3
Gender		
Male	169	36.1
Female	214	49.8
Payment method		
Self	104	21.2
Insured	265	52.7

Statistical Results

Analysis of the data suggested no statistically significant difference in vaccination rate based on age, χ^2 (1, N =384) = 2.222, p = 0.136. However, there was a statistically significant difference in vaccination rate based on gender, χ^2 (1, N = 382) = 7.157, p = 0.007, and payment, χ^2 (1, N = *368)* = 30.078, $p < 0.001$. Vaccination rates were significantly higher in females than males and also significantly higher in insured versus self-pay respondents.

Conversely, among the participants that did not vaccinate (n = 220), eight barriers were identified as the reason the vaccine was not received. The most prevalent barrier was the belief that the influenza vaccine causes the flu (n = 61). The remaining barriers are, in order of prevalence, a lack of time to get the shot (n = 50), choosing not to receive any immunizations (n = 34), a belief that the vaccine has serious side effects (n = 43), that it is too costly (n = 29), a belief that the participant is not at risk for contracting the flu (n = 29), an egg or vaccine allergy (n = 10), and lack of knowledge in where to get the vaccine (n = 4). These data are illustrated in Figure 2. The frequency of a barrier being chosen, based on demographics, is shown in Table 2.

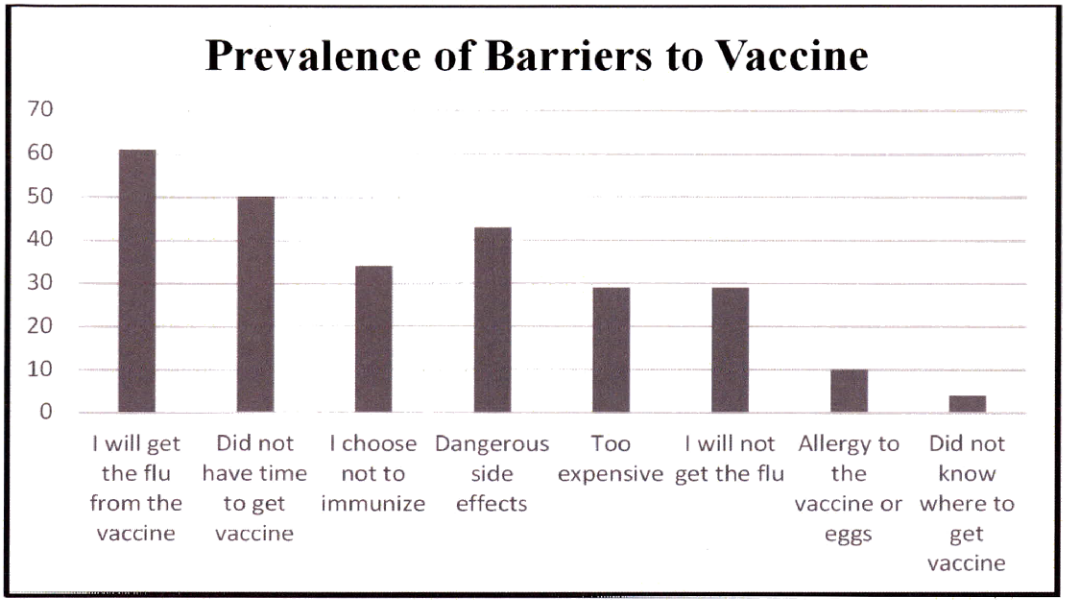

Figure 2. Prevalence of barriers to vaccine.

Table 2

Likelihood of Barriers Based on Demographic Data

	Sample size	Expense	Time	Location unknown	Will get flu from vaccine	Side effects	No danger of getting flu	Choose not to immunize	Allergy to vaccine and/or eggs
Respondents who did not receive vaccine	220	13.2%	22.7%	1.8%	27.7%	19.5%	13.2%	15.5%	4.5%
Age (years)									
18-39	115	13.9%	24.3%	2.6%	24.3%	17.4%	17.4%	13.9%	4.3%
40-64	98	13.1%	22.4%	1.0%	31.6%	23.5%	9.2%	17.3%	5.1%
Gender									
Male	105	13.2%	26.7%	1.9%	33.3%	18.1%	12.4%	**8.6%**	6.7%
Female	106	13.2%	19.8%	1.9%	21.7%	22.6%	15.1%	**21.7%**	2.8%
Payment Method									
Self-	79	**26.0%**	**11.4%**	1.3%	25.3%	17.7%	16.5%	11.4%	2.5%
Insured	124	**0.0%**	**30.6%**	2.4%	28.2%	19.4%	12.9%	19.4%	6.5%

Statistical analysis was performed to determine significance of a barrier. There were only three barriers that had a statistically significant difference between demographic levels. The barrier of expense was listed significantly more for self-pay respondents compared to insured, χ^2 (1, N = 204) = 46.187, $p < 0.001$. The barrier of time was listed significantly more for insured respondents than for self-pay respondents, χ^2 (1, N = 203) = 10.053, p = 0.002. Finally, the barrier of "choose not to immunize" was selected significantly more for female respondents when compared to men, χ^2 (1, N = 211) = 7.065, p = 0.008). All other differences were not statistically significant.

By incorporating calculated percentages, statistics disclosed that 43.6% of the population surveyed did receive the influenza vaccine with 56.4% declining the influenza vaccine (see Figure 3). In regard to the purpose of the study and the posed research questions, 56% (n = 220) of the population in north Mississippi that were surveyed did not receive the influenza vaccine. That is a substantial cross-section of the population. Analysis of the data showed that a large percentage (27%) of the unvaccinated participants believed that the influenza vaccine caused the flu. Interestingly, statistical significance was found among the female population. Of the participants that chose not to vaccinate, women reported the barriers that "You will get the flu from the flu vaccine" (21.7%), "It has dangerous side effects" (22.6%), "I am not at risk of contracting the flu" (15.1%), and "I choose not to immunize" (21.7%) more than any other barriers. This implies that educating the female population about the vaccine is of high importance.

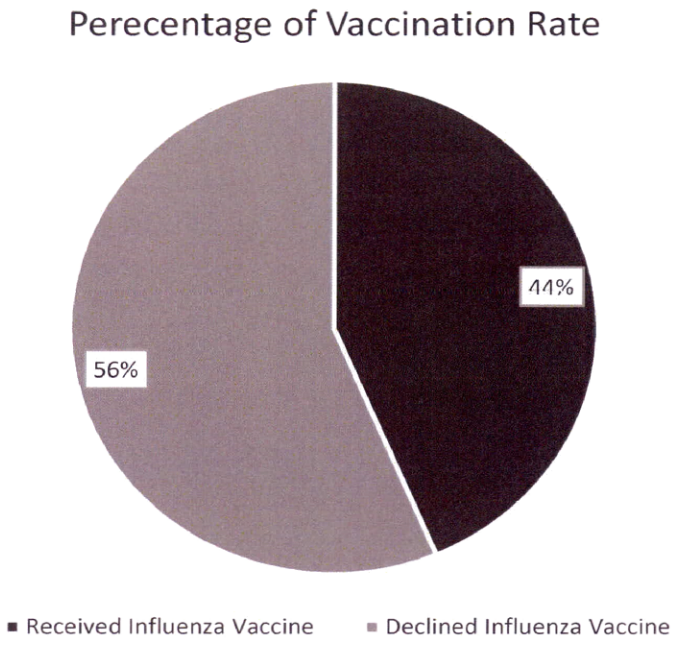

Figure 3. Percentage of vaccination rate.

Also, of interest, the uninsured participants reported the vaccine was too expensive; whereas, the insured population reported no barrier to cost but a large barrier regarding time (30.6%). Efforts could be concentrated on establishing and advertising free immunization clinics to address the cost issue. Many hospitals, clinics, and health departments offer free flu shot clinics during the influenza season that could improve vaccine uptake. To address the time component for the insured population, expansion of drive-thru flu shot clinics or flu vaccines offered by employee health are options to improve vaccination rates among this demographic.

CHAPTER V

Summary, Conclusions, and Recommendations

Outcomes of the Study

The purpose of this study was to determine the barriers to the administration of the influenza vaccine. Knowledge of the barriers will lead to changes in the education process and improvement in the number of vaccines administered. This study recognized the issue of noncompliance and determined why it was present. By recognizing barriers, the study improved awareness of them with the goal of developing education to be able to assist the public in overcoming these barriers and aid providers in practical intervention. This research study is significant because in one way or another flu affects everyone.

During the 20th century, the use of vaccines has increased the world's life expectancy and longevity. Vaccines are among the most cost-efficient and effective preventative services available. The flu vaccine is no exception. Yet, many individuals choose not to be vaccinated. The purpose of this research project was to determine barriers to vaccine uptake. According to the HHS, the flu causes millions of illnesses, hundreds of thousands of hospitalizations, and thousands of deaths each flu season. Influenza is a very common illness, and for most people it is an inconvenience. For others, it can be deadly. Particularly vulnerable populations are the elderly, children, pregnant women, and individuals with chronic disease. Influenza in these high-risk individuals can progress to serious illnesses, such as sinus infections, bacterial pneumonia, or overwhelming infection leading to death. Influenza can lead to worsening of preexisting chronic diseases including asthma and diabetes.

Complications associated with influenza greatly affect the health of our nation and place a tremendous burden on the healthcare community (CDC, 2017c).

Using Nola Pender's Health Promotion Model as a guide, her concepts of prior related behavior, personal factors, perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity-related affect, interpersonal influences, situational influences, commitment to a plan of action, immediate competing demands and preferences, and health-promoting behavior were explored to determine ways to increase the rate of influenza vaccine administration (Sakraida, 2014).

Pender's model promotes making healthy choices and motivating people to take initiative to improve their health. The HPM encourages healthcare providers to educate patients as a means of preventing illness and achieving maximum health. It advocates using positive motivators and avoiding fear tactics. Pender brings attention to the fact that healthcare choices lie in the hands of the patient. Changes in outcomes can be made by researching patients' behaviors and attitudes toward health and healthcare. When providers are equipped with strategies and knowledge regarding health promotion and barriers to it, they can promote health, decrease healthcare costs, and improve patient outcomes (Shin et al., 2008).

The current researchers developed the following two research questions to guide data collection regarding barriers to the influenza vaccine:

1. What percentage of the population surveyed in north Mississippi did not receive the influenza vaccine?
2. Of the percentage of the population surveyed that did not receive the influenza vaccine, what were the barriers to vaccine uptake?

One concern related to vaccine preventable diseases like influenza is the section of the population that is unvaccinated or under-vaccinated. When the population as a whole is not sufficiently vaccinated, there is a greater risk for a potential pandemic outbreak. The influenza virus is capable of undergoing small variations to its genetic structure. This explains why a yearly vaccine modification is required and why yearly vaccination is imperative (NIAID, 2012).

Vaccination is vital to prevention and control of seasonal influenza. Influenza truly is a vaccine preventable illness. According to the CDC, seasonal influenza is highest in children; however, the risk for complications is higher in adults ages 65 years and older. Studies show that those who receive the flu vaccination have 40% to 60% less risk of developing the influenza infection than those who do not receive the vaccination (Rolfes et al., 2016).

The research findings will be discussed in this chapter, and results of the questionnaire will be explored and interpreted. The findings of this study will be compared to previously related literature. Suggestions for providers regarding ways to circumvent barriers to vaccination will be discussed. Limitations of the study and further recommendations will be included.

Summary of Findings

In this study, 600 surveys were distributed evenly among four family medical clinics. The clinics were located in central and north Mississippi. A total of 392 surveys were completed. The population consisted of adults between the ages of 18 and 64 years. The age of respondents was nearly evenly distributed, with 50.0% (n = 196) aged 18-39 years and 48.2% (n =1 89) aged 40-64 years. No age was reported for 7

respondents. More females (54.6%, $n = 214$) completed the survey than males (43.1%, $n = 169$), and 9 respondents did not report gender. The majority of respondents were insured (67.6%, n = 265), with the remainder being self-pay (26.5%, $n = 104$) and no payment type reported ($n = 23$).

Regarding immunization, 43.6% ($n = 171$) respondents reported that they did receive the flu vaccine for the current season. The other respondents reported not getting the vaccine (56.1%, $n = 220$) or did not answer the question ($n = 1$). The vaccination rates based on respondent demographics showed there was no statistically significant difference in vaccination rate based on age, $\chi^2(1, N = 384) = 2.222$, $p = 0.136$. There was a statistically significant difference in vaccination rate based on gender, χ^2 $(1, N = 382) = 7.157$, $p = 0.007$, and payment, χ^2 $(1, N = 368) = 30.078$, $p < 0.001$. Vaccination rates were significantly higher in females than males and also significantly higher in insured versus self-pay respondents.

The questionnaire asked participants if they had previously received an influenza vaccine. It asked about age, sex, and insurance coverage. Participants were also questioned regarding beliefs about the vaccine, time, personal choice, opinions of safety, allergy to the vaccine, cost, access, and importance of flu vaccination.

The researchers concurred that the results occurred for various reasons. The predominant barrier to receiving the influenza vaccine was, "Will get the flu from the vaccine." Many people do not know what an inactivated vaccine actually is. Patients need more education that there is no live flu virus in influenza vaccines. The vaccine cannot cause the flu.

Women are more likely to seek preventative care and see their providers more often. Men often wait until they are significantly sick to see a provider. The insured respondents are more likely to get the vaccine because of better preventative services and possibly cost. Many insurance companies are providing better incentives for preventative care. These companies may not be pushing the influenza vaccine to any greater extent; but simply by increasing the patient's presence in the clinic for preventative care the patient is more likely to receive education on the influenza vaccine and get one. Most, if not all, insurance companies pay 100% for influenza vaccines. Even though the vaccine is usually no more than $25.00 to $30.00, that could still be cost-prohibitive for some patients. The uninsured patients have not been well-educated on local health fairs and the numerous other free options for immunization that are available.

The barrier of time was greater for insured respondents. It can be assumed that most insured patients are employed, thus needing to be at work instead of sitting in a clinic. More women than men selected the barrier of "choose not to immunize." Women are more likely to research and read about healthy issues online and could be more concerned about adverse effects even if they are unfounded or not on reputable websites.

Discussion of Findings

The topic of immunizing is broad with many dynamics that require further studies to succinctly identify perceptions as well as predictors (Cheung et al., 2015). The literature reviewed both compared and contrasted to the findings of this study.

Bahr and Benjamin (2016) found that the strongest health care associated factor in receipt of the vaccine was related to misconception about the flu vaccine. In regard to attitudes toward the influenza vaccination, 47.8% of students believed they would actually get the flu from receiving the vaccine, 41.6% believed the vaccine would cause serious side effects, and 39.6% agreed that they did not consider themselves in danger of contracting the flu. Issues related to cost and access to the flu vaccine had the lowest percentage. Of the students, 22.4% said vaccines were too expensive, and 19.4% reported not knowing where to receive a flu vaccine. The research outcomes support that the need for public health education regarding the seasonal influenza vaccine is greatly needed because education and personal beliefs present a large barrier to the seasonal influenza vaccination uptake (Bahr & Benjamin, 2016). Comparatively, participants believed the vaccine could give them the flu in both studies. The current study showed that many participants believed the vaccine has dangerous side effects as this study indicated. Further, the study did not show this to be the most significant reason for flu vaccine declination as this study showed, but this study was performed during a significant flu season.

The study by Hilyard et al. (2017) revealed data similar to other studies in that percentages of vaccinated children were no different between parents with insurance and parents without insurance. However, there was a strong relationship between uptake and knowledge and between uptake and media consumption. As far as younger parents were concerned, practitioners were influential. An additional significant factor was educational level. Across the board, parents with a high school or less education were more likely to vaccinate their children than parents with some or more college

(47% vs. 29%, $p < 0.01$). This study also factored in level of education, which the current researchers did not, but found the opposite outcome with low education levels correlating with higher vaccination levels. In contrast, this study found no difference in vaccination rates and insurance coverage. The current study found a higher vaccination rate in participants that had insurance (Hilyard et al., 2017).

Pless et al. (2017) indicated that the findings of a study with nurses listing "maintaining a strong and healthy body," "protecting decisional autonomy," and "perception of an untrustworthy environment" as the main recurring theme among the nurses interviewed. Of those interviewed, "nearly all of the nurses expressed the belief that influenza did not pose a threat for them since they were healthy, did not belong to the high-risk population, and had never before fallen ill with influenza" (Pless et al., 2017, para. 11). Information gleaned from the interviews revealed that there is a "lack of trust in the efficacy and safety of the influenza vaccine itself or a lack of trust in those individuals or health authorities promoting and selling the vaccine" (Pless et al., 2017, para. 21). Pless et al. felt that these three main themes are not three different reasons entirely but rather are connected. Pless et al.'s interpretation is that nurses desire to maintain a healthy body is important due to being immersed in an environment that they do not completely trust. In comparison, the current study had a significant percentage of participants (19.5%) that felt the flu vaccine has dangerous side effects. This study was not limited to one profession nor did the researchers ask about profession in the questionnaire.

Asma et al. (2015) conducted a study with healthcare providers and found that having a chronic disease requiring vaccination increased the vaccination rate by 5.13

times. Believing that other healthcare providers felt vaccination was important increased the vaccination rate by 3.45 times. Feeling that the influenza vaccine is effective increased the vaccination rate by 6.31 times. Believing that natural therapy for flu prevention is superior to the influenza vaccine decreased the vaccination rate by 0.38 times. The noncompliant group in this study was 66% female. This study found that being male, increased age, increased years working in health care, working in the internal medicine group, living with someone older than 65 years, and having a chronic disease all increase compliance with influenza. One noted finding was that a significant percentage of all participants felt that the flu vaccine can cause the flu and side effects—though both are unlikely. This study reflected that the rate of vaccination against the flu has many factors and is a complex issue. It assisted in the development of strategies of the current research with the ultimate goal of increasing the influenza vaccination rate (Asma et al., 2015). Asma et al. (2015) contrasted with the current study which found greater vaccine compliance in women. In comparison, the participants in the current study that were vaccinated were in the older group (ages 40-64 years). The current researchers did not factor in chronic disease and was not limited to healthcare providers.

Finally, Nyhan and Reifler (2015) stated that the results indicated that more than 4 in 10 Americans believe the misperception that the flu vaccine can give you the flu is "somewhat accurate" (31%) or "very accurate" (12%). A smaller portion of the sample held the belief that the vaccine is unsafe (12% say "not very safe," 4% "not at all safe") (Nyhan & Reifler, 2015). Comparatively, the current researchers' study also showed that it is commonly believed that the flu vaccine can give you the flu, but the

researchers also had a high percentage of participants that felt the vaccine had dangerous side effects.

Limitations of the Research

Limitations of this study regarding the barriers for administration of the influenza vaccine included the following:

1. The small scale of the population tested.
2. Study limited to a small region.
3. Limited number of survey sites.
4. Reliability and validity of the questionnaire utilized.
5. Possibility of bias from those surveyed.
6. Factors such as race, education, and income not included in survey.

One limitation of this study was the sample size. Due to the relatively small sample size, the results of this study may not be generalizable. The study only included survey results from 392 individuals. Another limitation to the study would be the geographically small region of the United States that was included in the study and the fact that only four healthcare clinics were utilized for the distribution of surveys.

The questionnaire used for data collection was developed by the researchers, and no validity or reliability for its usefulness was established. Another weakness was the possibility of bias. The people questioned could possibly be more opinionated on this topic since they were actually in a healthcare facility. The current survey did not ask about race, level of education, or level of income. Though these may not be limitations, they could certainly add other interesting factors to the results.

Implications for Future Research

Nola J. Pender's Health Promotion Model was found to be applicable to this research study due to its focus on making healthy choices and motivating people to take initiatives to improve their own health. The research study related to the HPM by determining barriers to flu vaccine uptake. By utilizing the information from this study, healthcare providers will be better able to utilize the principles of the HPM as they promote healthy behaviors, such as receiving the vaccine, thereby improving patient outcomes. The illness and complications associated with the influenza virus are far-reaching into every aspect of health care. The researchers concluded that the findings of this study are quite remarkable in relation to clinical practice. The research showed that education and personal beliefs present a large barrier to the uptake of the vaccine. This research study will be a valuable resource to healthcare providers to ascertain why their patients are electing to not receive the influenza vaccine. The research outcomes support that the need for public health education regarding the seasonal influenza vaccine is greatly needed. Another significant finding in the study is that 22.7% of those surveyed indicated that they did not have time to get the influenza vaccine. The individuals surveyed in this study were in a healthcare clinic during flu season. Does that indicate that they were unaware of where to receive the vaccine? The public needs to be more educated on where, when, and how to receive influenza vaccines. Future research utilizing this study should focus on what is needed to increase the number of vaccinated individuals. We now know from the results of this study that the majority of individuals believe they will contract the influenza virus from the vaccine. If this study were to be replicated in the future, it would be beneficial to focus on why individuals

believe they will contract the influenza virus when there is no live virus in the vaccine itself. It could simply be that if there were more education regarding the vaccine, these individuals who decline would instead agree to vaccine administration. Regarding the second most answered reason of "did not have time to get a flu vaccine," the focus for future research should be on whether or not these individuals know where to receive a flu vaccine that is quickly accessible. The researchers from this study have garnered valuable information for all healthcare providers who utilize the HPM in their practice. Having a greater understanding of why individuals decline the flu vaccine allows the provider the ability to provide the appropriate information to increase vaccine uptake within their community.

REFERENCES

Albert, S. M., Nowalk, M. P., Yonas, M. A., Zimmerman, R. K., & Ahmed, F. (2012). Standing orders for influenza and pneumococcal polysaccharide vaccination: Correlates identified in a national survey of U.S. primary care physicians. *BMC Family Practice, 13*(1), 22-31. doi: 10.1186/1471-2296-13-22

Asma, S., Akan, H., Uysal, Y., Pocan, A. G., Sucakli, M. H., Yengil, E., & Kut, A. (2016). Factors effecting influenza vaccination uptake among health care workers: A multi-center cross-sectional study. *BMC Infectious Diseases, 16*(192), 1-9. Retrieved from http://dx.doi.org/10.1186/s12879-016-1528-9

Bahr, K. O., & Benjamin, S. M. (2016). Barriers associated with seasonal influenza vaccination among college students. *Influenza Research and Treatment*, 1-5. doi: 10.1155/2016/4248071

Centers for Disease Control and Prevention. (2017a). *CDC's World Health Organization (WHO) collaborating center for surveillance, epidemiology and control of influenza.* Retrieved from https://www.cdc.gov/flu/pdf/freeresources/general/who-collaboration-sell-sheet.pdf

Centers for Disease Control and Prevention. (2017b). *Flu vaccination coverage, United States, 2015-16 Influenza Season.* Retrieved from https://www.cdc.gov/flu /fluvaxview/coverage-1516estimates.htm

Centers for Disease Control and Prevention. (2017c). *Key facts about influenza.* Retrieved from https://www.cdc.gov/flu/keyfacts.htm

Centers for Disease Control and Prevention. (2017d). *Prevention and control of seasonal influenza with vaccines: Recommendations of the advisory committee on immunization practices (ACIP) – United States 2017-2018.* Retrieved from https://www.cdc.gov/flu/pdf/professionals/acip/acip-2017-18_summary-of-recommendations.pdf

Centers for Disease Control and Prevention. (2017e). *Why get a flu vaccine?* Retrieved from https://www.cdc.gov/flu/pdf/freeresources/general/why-get-flu-vaccine.pdf

Cheung, S., Wang, H., Mascola, L., El Amin, A. N., & Pannarai, P. S. (2015). Parental perceptions and predictors of consent for school-located influenza vaccination in urban elementary school children in the United States. *Influenza and Other Respiratory Viruses, 9*(5), 225-262. doi:10.1111/irv.12332

College of Physicians of Philadelphia. (2017). *The history of vaccines.* Retrieved from https://www.historyofvaccines.org/glossary/u

English Oxford living dictionaries. (2017). Retrieved from https://en.oxforddictionaries.com/definition/people

Hilyard, K. M., Quinn, S. C., Kim, K. H., Musa, D., & Freimuth, V. S. (2014). Determinants of parental acceptance of the H1N1 vaccine. *Health Education and Behavior, 41*(3), 307-314. Retrieved from https://doi.org/10.1177/1090198113515244

Kelley, J. A., Sherrod, R. A., & Smyth, P. (2009). Coronary artery disease and smoking cessation intervention by primary care providers in a rural clinic. *Online Journal of Rural Nursing and Health Care, 9(2)*, 82-94.

Kung, Y. M., (2013). Factors associated with health care personnel influenza vaccination behavior. *Journal for Nurse Practitioners,* 9(2), 87-92. doi:10.1016/j.nurpra.2012.11.018

Meyer, S. B., & Lum, R. (2017). Explanations for not receiving the seasonal influenza vaccine: An Ontario Canada-based survey. *Journal of Health Communication*, *22*(6), 506-514. doi:10.1080/10810730.2017.1312720

Moran, M. B., Chatterjee, J. S., Frank, L. B., Murphy, S. T., Zhao, N., Chen, N., & Ball-Rokeach, S. (2017). Individual, cultural and structural predictors of vaccine safety confidence and influenza vaccination among Hispanic female subgroups. *Journal of Immigrant and Minority Health*, 19(4), 790-800. Retrieved from https://link-springer-com.libprxy.muw.edu/article/10.1007%2Fs10903-016-0428-9

National Institute of Allergy and Infectious Disease (2012, September 20). *How influenza pandemics occur*. Retrieved from https://youtu.be/DdFCx8jbesQ?list=PL9rasaw-kjnzq6gz7bkMg8TQPMVKv7Bjl

National Institute of Allergy and Infectious Diseases. (2017). *Influenza*. Retrieved from https://www.niaid.nih.gov/diseases-conditions/influenza

Nowalk, M. P., Nolan, B. A., Nutini, J., Ahmed, F., Albert, S. M., Susick, M., & Zimmerman, R. K. (2014). Success of the 4 pillars toolkit for influenza and pneumococcal vaccination in adults. *Journal for Healthcare Quality*, 36(6), 5-15. Retrieved from http://dx.doi.org.libprxy.muw.edu/10.1111/jhq.12020

Nyhan, B., & Reifler, J. (2015). Does correcting myths about the flu vaccine work? An experimental evaluation of the effects of corrective information. *Vaccine*, 33(3), 459-464. doi:10.1016/j.vaccine.2014.11.017

Office of Disease Prevention and Health Promotion. (2017). *Immunization and infectious diseases.* Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases

Pender, N. J. (2011). *The health promotion model manual.* Retrieved from https://deepblue.lib.umich.edu/bitstream/handle/2027.42/85350/HEALTH_PROMOTION_MANUAL_Rev_5-2011.pdf?sequence=1&isAllow

Pender, N. J., Murdaugh, C., & Parsons, M. A. (2011). *Health promotion in nursing practice*. Upper Saddle River, NJ: Pearson.

Pender, N. J., & Pender, A. R. (1980). Illness prevention and health promotion services provided by nurse practitioners: Predicting potential consumers. *American Journal of Public Health, 70,* 798-803.

Rolfes, M. A., Foppa, I. M., Garg, S., Flannery, B., Brammer, L., Singleton, J. A., . . . Bresee, J. (2016*).* Estimated influenza illnesses, medical visits, hospitalizations, and deaths averted by vaccination in the United States. *Centers for Disease Control and Prevention*. Retrieved from https://www.cdc.gov/flu/about/disease/2015-16.htm

Sakraida, T. J. (2014). Health promotion model. In M. R. Alligood, *Nursing Theorists and Their Work*. St. Louis, MO: Elsevier Mosby.

Shin, K. R., Kang, Y., Park, H. J., Cho, M. O., & Heitkemper, M. (2008). Testing and developing the health promotion model in low-income, Korean elderly women. *Nursing Science Quarterly, 21*(2), 173-178. doi:10.1177/0894318408314698

U.S. Department of Health and Human Services. (2017). *Annual influenza press briefing.* Retrieved from https://www.hhs.gov/about/leadership/secretary/speeches/2017-speeches/annual-influenza-press-briefing.html

APPENDIX A

Approval of Mississippi University for Women's

Institutional Review Board

The W Mississippi University for Women
A Tradition of Excellence for Women and Men

Provost and Vice President for Academic Affair
1100 College Street MUW-160
Columbus, MS 39701-580
(662) 329-714
Fax (662) 329-714

www.muw.edu

February 28, 2018

Brandi Lambert, Ph.D.
Mississippi University for Women
College of Nursing and Health Sciences
1100 College Street, MUW- 910
Columbus, Mississippi 39701

Dear Dr. Lambert:

I am pleased to inform you that the members of the Institutional Review Board (IRB) have reviewed the following proposed research and have approved it as submitted:

Name of Study:	Barriers to the Administration of the influenza Vaccine
Research Faculty/Advisor:	Brandi Lambert, Ph.D.
Investigators:	Lauren Babb, Heather Bishop, Carrie Dozier, Renea Hopple, Hannah Marlin and Jennifer Sartin

I wish you much success in your research.

Sincerely,

Thomas C. Richardson, Ph.D.
Provost and Vice President for Academic Affairs

TCR/tc

pc: Tammie McCoy, Institutional Review Board Chairman

APPENDIX B

Letter to Informed Consent

To Whom It May Concern:

We are graduate students in the Family Nurse Practitioner program at Mississippi University for Women in Columbus, Mississippi. As a program requirement, we are conducting a study to assess who has not taken the influenza vaccine and why they have not taken it. We will be surveying patients ages 18 to 64 years. We are requesting permission to survey patients in your clinic that meet that criteria. We are aware that we will need to maintain the confidentiality of all information obtained.

We agree to undergo or consent to any HIPPA requirements set forth by your practice regarding patient privacy and confidentiality. The data collected from each survey will be recorded on a Data Collection Worksheet to be kept on a confidential electronic flash drive stored in a secure location with access only to the researchers. At termination of the research project, this information will be destroyed by incineration of the drive per HIPPA guidelines. No clinic or patient identifiers will be used in the study.

Your participation in this study is strictly voluntary. You may withdraw your consent and participation in this study at any time. The result of the study will be made available to you upon completion and may have such beneficial use for your practice.

If you have any questions concerning this study, please contact the following committee members: Lauren Babb (662-610-8045), Heather Bishop (662-386-4552), Carrie Dozier (662-352-4641), Renea Hopple (662-415-1683), Hannah Marlin (662-213-6787), Jennifer Sartin (662-660-9300), or Dr. Brandi Lambert (committee chair) at (662-210-2053).

Sincerely,

Lauren Babb, Heather Bishop, Carrie Dozier, Renea Hopple, Hannah Marlin, Jennifer Sartin

---

I have read the above letter of consent and agree to the utilization of this clinic for the above mentioned research project. I understand that HIPPA regulations will be strictly followed and the confidentiality of each chart chosen will be maintained. I also understand that the results of the study will be made available to me at the project's end.

_____	_____	_____
Name and Title	Signature	Date

APPENDIX C

Survey

To whom it may concern:

We are family nurse practitioner students from Mississippi University for Women, and we need your help. We are researching who does not take the flu shot and why they do not take the flu shot. We would appreciate your completing the following short survey. By doing so, you are consenting to participate in our research project.

We appreciate your help.

Sincerely,

Lauren Babb, Heather Bishop, Carrie Dozier, Renea Hopple, Hannah Marlin, Jennifer Sartin

---

Age: ___ 18-39 ___ 40-64

Gender: ___ Female ___ Male

Type of Payment: ___ Self-pay ___ Health insurance

1. Did you receive the flu vaccine for this current flu season?
   ___ No ___ Yes

   If you answered *Yes* to the previous question, you have completed this survey. If you answered *N*o, please continue to question #2.

2. What were the reasons you did not get a flu vaccine? (Check all that apply)
   - ____ a. Too expensive.
   - ____ b. Did not have time to get a flu vaccine?
   - ____ c. Did not know where to get a flu vaccine?
   - ____ d. I believe I will get the flu from the flu vaccine.
   - ____ e. I believe the flu vaccine has dangerous side effects.
   - ____ f, I do not believe I am in danger of getting the flu.
   - ____ g. I choose not to immunize.
   - ____ h. I have an allergy to the flu vaccine and/or eggs.

APPENDIX D

Raw Immunization Data: MUW 2018

Case	Age: 18-39 = 1 40-64 = 2	Gender M=1 F=2	Payment Self-1 Insured = 2	Imm: Yes = 1 No = 2	Barriers Yes = 1 No = 2 Expense	No Time	Where to get it	Causes flu	Side effects	I won't get the flu	Choose not to immune.	Allergy to the vaccine
Example	1	2	1	1								
Example	2	1	2	2	2	2	2	1	1	1	2	2
1	2	2	2	2	2	2	2	2	2	2	1	2
2	1	2	1	2	2	2	2	2	1	2	2	2
3	2	2	2	2	2	1	2	2	2	2	2	2
4	2	1	2	1								
5	2	1	1	2	2	2	2	2	1	2	2	2
6	1	2	2	2	2	2	2	1	2	2	2	2
7	1	2	1	2	2	2	2	2	1	2	1	2
8	1	2	1	2	2	2	2	2	1	2	2	2
9	1	1		2	2	2	2	2	1	2	2	2
10	2	2	2	1								
11				1								
12	2	1	1	2	1	2	2	2	2	2	2	2
13	2	2	2	1								
14				1								
15	1	1	2	1								
16	2	2	2	2	2	2	2	2	2	2	1	2
17	1	2	2	2	2	2	2	2	1	2	2	2
18	2	1	2	2	2	2	2	1	1	2	2	2
19	1			2	1	1	2	1	2	2	2	2
20	1	2	2	2	2	2	2	2	2	2	1	2
21	1	1	1	2	2	2	2	1	2	2	2	2
22	2	1	2	1								
23	2	2	2	1								
24	1	2		2	2	1	2	1	2	2	2	2
25	2	1	2	2	2	2	2	1	1	2	2	2
26	1	2		1								
27	2	1		2	2	2	2	1	2	2	2	2
28				2	2	2	2	1	2	2	2	2
29	2	2	2	2	2	1	2	2	2	2	2	2
30	1	1	1	2	2	1	2	2	2	2	2	2
31	1	2	2	2	2	1	2	2	2	2	2	2
32	1	2	1	2	1	2	2	2	2	2	2	2
33	1	2	1	2	2	2	2	1	2	2	2	2
34			2	2	2	2	2	2	2	2	1	2
35	2	2	2	2	2	2	2	2	2	2	1	2
36	1	2	2	2	2	2	2	2	2	2	1	2
37	1		2	2	2	2	2	2	2	2	1	2

Case	Age: 18-39 = 1	Gender M=1	Payment Self-1	Imm: Yes = 1 No = 2	Barriers Yes = 1 No = 2	No	Where to get it	Causes	Side	I won't get the	Choose not to	Allergy to the
38	1	1	2	2	2	2	2	2	2	2	2	1
39	2	1	1	2	2	2	2	1	2	2	2	2
40	2	2	2	2	2	1	2	1	1	2	2	2
41	1	1	2	2	2	1	2	1	2	2	2	2
42	2	2	2	1								
43	2	2	2	1								
44	1	2	2	2	2	2	2	2	2	2	1	2
45	2	2	2	1								
46	2	1	2	1								
47	2	2	2	1								
48	2	2	1	2	1	2	2	2	2	2	2	2
49	1	2	1	2	2	1	2	2	2	2	2	2
50	2	1	2	1								
51	1	2	2	2	2	1	2	2	2	1	2	2
52	1	1	1	2	2	2	1	2	2	2	2	2
53	1	1	2	1								
54	2	2	2	1								
55	1	2	2	1								
56	2	2										
57	2	2	1	1								
58	2	1	2	1								
59	2	1	2	1								
60	1	1	2	1								
61	2	2	2									
62	1	2	2	1								
63	1	1	2	1								
64	1	2	2	1								
65	1	1		1								
66	1	1	2	1								
67	1	2	2	1								
68	2	1	2	1								
69		2	2	1								
70	2	2		1								
71	1	2		2	2	2	2	2	1	2	2	2
72	2	2		2	2	2	2	2	1	2	2	2
73	2	1		2	2	1	2	2	2	2	2	2
74	1	1	2	2	2	2	2	2	1	2	2	2
75	1	2		1								
76	2	2	2	1								
77	1	2	2	1								
78	1	1	1	2	2	1	2	2	2	2	2	2
79	2	1	1	2	1	2	2	2	2	2	2	2
80	1	1	2	1								

Case	Age: 18-39 = 1	Gender M=1	Payment Self-1	Imm: Yes = 1 No = 2	Barriers Yes = 1 No = 2	No	Where to get it	Causes	Side	I won't get the	Choose not to	Allergy to the
81	2	1	1	2	2	2	2	1	2	2	2	2
82	2	2	2	1								
83	2	2	2	1								
84	1	1	2	2	2	2	2	2	2	2	2	1
85	2	2	2	1								
86	2	1	2	2	2	2	2	2	1	2	2	2
87	1	1	2	1								
88	1	2	1	2	2	2	2	1	2	2	2	2
89	2	2		2	2	2	2	1	1	2	2	2
90	2	2		2	2	2	2	2	2	2	1	2
91				1								
92	2	1	1	2	2	2	2	1	2	1	2	2
93	2	2	2	1								
94	2	1	2	1								
95	1	1	2	2	2	2	2	1	2	2	2	2
96	2	2	1	1								
97	2	2		1								
98	1	2	2	1								
99	2	2		1								
100	2	1	1	2	1	2	2	2	2	2	2	2
101	2	1	2	2	2	1	2	2	2	2	2	2
102	1	2	2	2	2	1	2	2	2	2	2	2
103	1	2	2	1								
104	2	1	2	2	2	1	2	2	2	2	2	2
105	1	2	1	2	2	2	2	1	2	2	2	2
106	1	2	1	1								
107	2	1	1	2	2	2	2	2	2	1	2	2
108	2	2	2	1								
109	1	2		2	1	2	2	2	2	2	2	2
110	1	1	2	1								
111	1	2	2	1								
112	1	2	2	1								
113	2	1	2	2	2	2	2	1	2	1	2	2
114	1	1	2	1								
115	2	1	2	2	2	2	1	2	2	2	2	2
116	2	1	2	2	2	2	2	1	2	2	2	2
117	1	2	1	1								
118	1	2	2	1								
119	1	2	2	1								
120	1	2	2	2	2	1	2	2	2	2	2	2
121	2	1	2	2	2	1	2	1	1	2	2	2
122	1	1	2	2	2	2	2	2	2	2	1	2
123	2	1	2	2	2	1	2	2	1	2	1	2

Case	Age: 18-39 = 1 40-64 = 2	Gender M=1 F=2	Payment Self-1 Insured = 2	Imm: Yes = 1 No = 2	Barriers Yes = 1 No = 2 Expense	No	Where to get it	Causes flu	Side effects	I won't get the flu	Choose not to immune.	Allergy to the vaccine
124	2	2	1	2	1	2	2	2	2	2	2	2
124	2	2	2	1								
125	2	2	2	1								
126	1	2	1	2	2	2	2	2	2	1	2	2
127	1	2	2	2	2	2	2	2	1	2	2	2
128	1	1	2	1								
129	2	1	1	2	1	1	2	2	1	2	2	2
130	2	1	2	2	2	`	2	2	2	1	2	2
131	2	1	2	2	2	2	2	2	1	2	1	2
132	2		2	1								
133	2	2	2	1								
134	1	2	1	2								
135	1	2	2	2	2	1	2	1	1	2	2	2
136	1	1	1	2								
137	1	1	1	2								
138	1	2	1	2	1	2	2	2	2	2	2	2
139	1	1	2	1								
140	1	2	2	1								
141	1	1	2	2								
142	2	1	2	1								
143	2	2	2	1								
144	2	2	2	1								
145				2	2	2	2	1	2	2	2	2
145	1	1	2	1								
146	1	1	2	1								
147	1	1	2	1								
148	1	2	2	1								
149	1	1	2	1								
150	2	2	1	2	1	2	2	1	1	1	2	2
151	1	2	2	1								
152	2	2	2	1								
153	1	2	1	2								
154	2	2	2	2	2	1	2	2	2	2	2	2
155	2	1	2	1								
156	2	2	1	2	2	2	2	2	2	2	1	2
157	2	2	1	1								
158	2	1	2	2	2	2	2	2	2	1	2	2
159	2	1	2	2	2	2	2	2	2	1	2	2
160	2	1	2	2	2	2	2	2	2	2	1	2
161	2	2	1	1								
162	1	1	1	2	1	2	2	2	2	2	2	2
163	2	2	2	1								
164	1	2	2	1								

Case	Age: 18-39 = 1 40-64 = 2	Gender M=1 F=2	Payment Self-1 Insured = 2	Imm: Yes = 1 No = 2	Barriers Yes = 1 No = 2 Expense	No	Where to get it	Causes flu	Side effects	I won't get the flu	Choose not to immune.	Allergy to the vaccine
165	1	1	1	2	1	2	2	2	2	2	2	2
166	1	2	1	1								
167	1	2	1	2	2	2	2	2	2	2	1	2
168	2	2	2	2	2	2	2	1	2	2	2	2
169	2	1	1	2	2	2	2	2	2	1	2	2
170	1	2	2	2	2	2	2	2	1	2	2	2
172												
173	2	1	1	2	2	2	2	1	2	2	2	2
174	1	2	1	2	2	2	2	2	2	1	2	2
175	2	2	2	1								
176	2	1	2	2	2	2	2	1	2	2	2	2
177	1	2	2	1								
178	2	2	1	2	2	2	2	2	1	2	1	2
179	2	2	2	2	2	2	2	2	1	2	2	2
180	2	1	2	1								
181	1	2	2	1								
182	1	2	1	2	2	2	2	2	2	2	1	2
183	2	2	2	2	2	2	2	1	2	2	2	2
184	1	2	1	2	2	1	2	2	1	2	2	2
185	1	2	1	2	1	2	2	2	2	2	2	2
186	1	2	2	2	2	2	2	2	2	1	2	2
187	1	2	2	2	2	2	2	2	2	2	1	2
188	2	1	2	1								
189	2	1	2	2	2	2	2	2	2	2	1	2
190	2	2	2	1								
191	2	1	2	1								
192	2	1	1	2	2	2	2	1	2	2	2	2
193	1	1	2	2	2	2	2	1	2	2	2	2
194	1	1	2	2	2	2	2	1	2	2	2	2
195	2	2	1	2	2	2	2	2	1	2	2	2
196	1	1	2	2	2	2	2	2	2	1	2	2
197	1	1	2	2	2	1	2	2	2	2	2	2
198	2	2	2	1								
199	2	2	1	1								
200	2	1	2	2	2	2	2	2	2	2	1	2
201	2	2	2	1								
202	2	1	2	1								
203	2	1	1	1								
204	2	1	1	1								
205	2	2	2	2	2	2	2	2	2	2	1	2
206	1	1	2	2	2	1	2	2	2	2	2	2
207	2	2	2	1								
208	2	2	2	1								

Case	Age: 18-39 = 1 40-64 = 2	Gender M=1 F=2	Payment Self-1 Insured = 2	Imm: Yes = 1 No = 2	Barriers Yes = 1 No = 2 Expense	No	Where to get it	Causes flu	Side effects	I won't get the flu	Choose not to immune.	Allergy to the vaccine
209	1	2	2	1								
210	1	2	2	1								
211	1	2	1	2	2	2	2	2	2	1	2	2
212	1	2	1	2	2	2	2	2	2	1	2	2
213	1	1	2	2	2	2	2	2	1	2	2	2
214	1	2	2	1								
215	1	2	1	2	1	2	2	2	1	1	1	2
216	1	2	2	1								
217	1	2	2	2	2	2	2	2	2	2	2	1
218	2	1	2	2	2	2	2	1	1	2	2	2
219	1	2	1	2	2	2	2	1	2	2	2	2
220	1	1	2	2	2	1	2	2	2	2	2	2
221	2	2	1	2	2	2	2	2	1	2	2	2
222	1	2	2	1								
223	2	2	2	2	2	1	2	2	2	2	2	2
224	1	2	2	2	2	2	2	2	2	1	2	2
225	1	1	2	2	2	2	2	1	1	2	1	2
226	1	2	2	1								
227	2	2	1	1								
228	2	2	2	2	2	2	2	1	2	2	2	2
229	1	1	2	2	2	1	2	2	2	2	2	2
230	1	1	2	2	2	2	2	2	1	2	2	2
231	2	1	2	2	2	1	2	2	2	2	2	2
232	2	1	2	2	2	2	2	1	2	2	2	2
233	1	2	2	2	2	2	2	2	2	1	2	2
234	2	2	2	2	2	2	2	1	2	2	2	2
235	2	2	2	2	2	2	2	2	2	2	1	2
236	1	1	2	2	2	1	2	2	2	2	2	2
237	1	2	2	2	2	2	2	1	2	2	2	2
238	2	1	2	2	2	2	2	1	2	2	2	2
239	2	1	2	1								
240	1	2	1	2	2	2	2	2	2	1	2	2
241	2	1	1	2	2	2	2	2	2	2	1	2
242	2	2	2	2	2	2	2	2	2	1	2	2
243	2	1	2	2	2	2	2	2	1	2	2	2
244	2	2	2	2	2	2	2	2	2	2	2	1
245	1	1	1	1								
246	2	1	1	1								
247	2	2	2	1								
248	2	2	2	2	2	2	2	1	2	2	2	2
249	2	1	1	1								
250	1	1	1	1								
251	1	2	2	1								

Case	Age: 18-39 = 1 40-64 = 2	Gender M=1 F=2	Payment Self-1 Insured = 2	Imm: Yes = 1 No = 2	Barriers Yes = 1 No = 2 Expense	No	Where to get it	Causes flu	Side effects	I won't get the flu	Choose not to immune.	Allergy to the vaccine
252	2	2	2	2	2	2	2	1	2	2	2	2
253	2	2	2	1								
254	2	2	2	1								
255	1	2	2	2	2	1	2	2	2	2	2	2
256	1	1	2	2	2	2	2	1	2	2	2	2
257	1	1	2	2	2	1	2	2	2	2	2	2
258	2	2	2	1								
259	2	1	2	2	2	1	2	2	2	2	2	2
260	2	2	2	1								
261	1	2	1	2	2	2	2	2	2	1	2	2
262	2	1	1	1								
263	1	2	1	2	2	2	2	1	2	2	2	2
264	2	1	1	2	1							
265	2	2	2	2	2	2	2	2	1	2	2	2
266	2	1	2	1								
267	2	2	2	1								
268	1	1	2	1								
269	1	1	2	1								
270	1	2	1	2	1	2	2	2	2	2	2	2
271	1	1	2	2	2	1	2	2	2	2	2	2
272	1	1	2	1								
273	1	2	1	2	2	1	2	2	2	2	2	2
274	1	2	2	1								
275	2	1	2	1								
276	2	1	1	2	2	2	2	2	2	2	2	1
277	2	2	2	1								
278	1	1	2	1								
279	2	2	2	1								
280	1	2	2	1								
281	1	1	2	1								
282	1	2	2	1								
283	2	2	2	1								
284	1	1	1	2	2	2	2	1	2	2	2	
285	2	1	2	1								
286	1	1	2	1								
287	1	2	2	1								
288	1	1	2	1								
289	1	2	2	2	2	2	2	2	2	2	1	2
290	2	1	1	2	1	2	2	2	2	2	1	2
291	1	1	2	2	2	2	2	1	2	2	2	2
292	1	2	2	2	2	2	2	1	2	2	2	2
293	2	2	2	2	2	2	2	2	1	2	2	2
294	1	2	2	1								

Case	Age: 18-39 = 1	Gender M=1	Payment Self-1	Imm: Yes = 1 No = 2	Barriers Yes = 1 No = 2	No	Where to get it	Causes	Side	I won't get the	Choose not to	Allergy to the
295	2	2	2	1								
296	2	1	2	1								
297	1	2	1	2	2	2	2	1	2	2	2	2
298	1	2	1	2	2	2	2	2	1	2	2	2
299	1	2	2	2	2	2	2	2	2	2	1	2
300	2	1	1	2	2	2	2	1	2	2	2	2
301	1	2	1	2	1	2	2	2	2	2	2	2
302	2	1	2	2	2	1	2	2	2	2	2	2
303	1	1	1	2	2	2	2	1	2	2	2	2
304	1	2	2	2	2	2	2	1	2	2	2	2
305	2	1	1	2	1	2	2	2	2	2	2	2
306	2	2	2	1								
307	2	1	2	2	2	2	1	2	2	2	2	2
308	2	2	2	2	2	2	2	2	2	2	2	2
309	1	1	2	2	2	2	2	2	2	1	2	2
310	1	1	2	2	2	2	2	2	2	1	2	2
311	2	2	1	2	1	2	2	2	2	2	2	2
312	1	2	2	1								
313	2	1	2	1								
314	2	1	2	1								
315	2	2	2	1								
316	2	2	2	1								
317	1	2	2	1								
318	1	2	2	1								
319	1	2	2	1								
320	2	2	2	2	2	2	2	2	2	2	1	2
321	2	1	2	1								
322	2	1	2	2	2	2	2	1	2	2	2	2
323	1	2	2	1								
324	2	1	1	1								
325	1	2	2	2	2	2	2	2	1	2	2	2
326	1	1	2	2	2	1	2	2	2	2	2	2
327	1	1	1	2	2	2	2	2	2	1	2	2
328	1	2	2	1								
329	1	2	2	2	2	2	2	2	2	2	1	2
330	2	1	2	2	2	2	2	2	2	2	2	1
331	2	2	2	2	2	2	2	2	1	2	2	2
332	2	1	2	2	2	1	2	2	2	2	2	2
333	1	2	2	2	2	2	2	2	2	2	1	2
334	2	1	1	2	1	2	2	2	2	2	2	2
335	1	1	2	2	2	2	2	1	2	2	2	2
336	1	2	2	2	2	2	2	2	2	1	2	2
337	1	1	1	2	2	2	2	2	2	2	2	1
338	1	1	2	1								

Case	Age: 18-39 = 1 40-64 = 2	Gender M=1 F=2	Payment Self-1 Insured = 2	Imm: Yes = 1 No = 2	Barriers Yes = 1 No = 2 Expense	No Time	Where to get it	Causes flu	Side effects	I won't get the flu	Choose not to immune.	Allergy to the vaccine
339	2	2	2	1								
340	2	1	2	2	2	2	2	1	2	2	2	2
341	1	1	2	1								
342	2	1	1	2	2	2	2	1	2	2	2	2
343	1	1	1	2	1	2	2	2	2	2	2	2
344	2	1	1	2	2	2	2	1	2	2	2	2
345	1	2	2	1								
346	2	2	2	1								
347	1	1	2	1								
348	1	2	2	1								
349	2	2	2	1								
350	2	1	1	1								
351	2	1	2	1								
352	1	2	2	1								
353	2	2	2	2	2	2	2	1	1	2	2	2
354	2	1	2	2	2	2	2	2	1	2	2	2
355	2	1	1	1								
356	1	2	2	2	2	2	2	1	2	2	2	2
357	2	2	2	2	2	1	2	2	2	2	2	2
358	1	2	2	2	2	2	2	2	2	1	2	2
359	1	2	2	1								
360	1	1	1	2	1	2	2	2	2	2	2	2
361	2	2	2	2	2	2	1	2	2	2	2	2
362	1	2	1	2	1	2	2	2	2	2	2	2
363	1	2	2	2	2	1	2	2	2	2	2	2
364	2	2	2	1								
365	2	1	1	2	2	1	2	2	2	2	2	2
366	2	1	1	2	2	1	2	2	2	2	2	2
367	1	1	1	2	2	1	2	2	2	2	2	2
368	1	1	1	2	2	2	2	1	2	2	2	2
369	2	1	2	1								
370	1	2	1	1								
371	2	1	2	2	2	2	2	2	2	2	2	1
372	2	1	2	2	2	2	2	1	2	2	2	2
373	1	1	1	1								
374	2	1	2	1								
375	2	2	1	2	1	2	2	2	2	2	2	2
376	1	1	1	2	1	2	2	2	2	2	2	2
377	2	1	1	2	2	2	2	2	1	2	2	2
378	2	2	2		1							
379	1	2	2	1								
380	2	2	2	2	2	2	2	2	2	2	1	2

Case	Age: 18-39 = 1 40-64 = 2	Gender M=1 F=2	Payment Self-1 Insured = 2	Imm: Yes = 1 No = 2	Barriers Yes = 1 No = 2 Expense	No Time	Where to get it	Causes flu	Side effects	I won't get the flu	Choose not to immune.	Allergy to the vaccine
381	1	2	2	2	2	1	1	2	2	2	2	2
382	1	2	2	1								
383	1	2	2	1								
384	2	2	2	1								
385	1	1	2	2	2	1	2	2	2	2	2	2
386	1	1	1	2	2	2	2	1	2	2	2	2
387	1	2	2	1								
388	1	1	1	2	2	2	2	2	2	1	2	2
389	1	2	2	2	2	1	2	2	2	2	1	2
390	1	2	2	2	2	1	1	2	2	2	2	2
391	1	1	2	2	2	2	2	1	1	1	2	2
392	1	2	No answer	2	1	2	2	2	1	2	2	2
393	1	2	2	2	2	2	2	2	2	1	2	2