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An Evidence-Based Intervention to Improve Vaccination Rates for Seasonal Influenza Among Registered Nurses

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Disclaimer

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Executive Summary

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Problem

Seasonal influenza continues to cause the hospitalizations and deaths of tens of thousands every year in the U.S. (National Foundation for Infectious Diseases, 2008). Vaccination of healthcare workers for influenza has been recommended for more than 30 years (Willis & Wortley, 2007) and reports of transmission of influenza by registered nurses (RNs) to patients are well documented. In spite of these facts, RN vaccination rates remain below the recommended target of 90% (U.S. Department of Health and Human Services, 2012). The evidence suggests that RNs who refuse influenza vaccination are less knowledgeable about influenza, the risks of the vaccine, side effects, and vaccine efficacy, than those who are vaccinated (Clark et al., 2009). Mandatory vaccination policies are becoming more common as efforts to improve rates voluntarily have failed.

Purpose

This project's purpose was to evaluate if an educational intervention on influenza and its risks, while dispelling common myths and misconceptions of influenza vaccines, would improve the rate of RN vaccination. The Health Belief Model's (Champion, 1984; Champion & Skinner, 2008; Glanz, Rimer, & Lewis, 2002) conceptual framework informed and guided the project.

Goal

The goal for this project was to improve RN vaccination rates for seasonal influenza, leading ultimately to decreased hospitalizations and mortality from influenza.

Objective

This project's primary objective was to develop and implement an evidence based educational intervention providing information to RNs on influenza's risks, vaccine efficacy and safety, while attempting to dispel myths and misconceptions commonly held by RNs who refuse seasonal influenza vaccination.

Plan

Over a two-week period in November 2013, presentations on influenza, its risks, and the safety and efficacy of vaccines, were provided at a large, urban medical center, reporting RN vaccination rates of 40%. A convenience sample of 57 RNs attended the presentations. Each participant’s pre-intervention vaccination status was then compared to his or her vaccination status following the intervention. Non-parametric and correlational tests were utilized to determine if vaccination rates improved following the intervention and if any relationships that might affect vaccination status could be identified.

Outcomes and Results

Vaccination rates increased only slightly following intervention, and the change was not significant. There were some associations noted with age and race/ethnicity and vaccination status that were identified. Results suggest that education alone is not sufficient to effect a positive change in vaccination. Further study is recommended in order to determine what, if any, combination of interventions might improve RN voluntary acceptance of vaccination, as mandatory healthcare worker vaccination policies are increasingly implemented across the country.

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To my sons, Bryan and Gregory, I would like to express my love and gratitude. Your love and support has been so encouraging to me. Lastly, I could not have accomplished all that I have, without the steadfast support of my husband, Michael. He has been my biggest fan, and has never waivered in his belief in me. He has unselfishly sacrificed time and treasure in order for me to pursue my dream, while placing on hold our life's journey. I look forward to beginning the rest of our journey together.

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Problem Recognition and Definition

Every year, seasonal influenza hospitalizes hundreds of thousands of people in the United States, contributes to up to 36,000 deaths, mostly in the very young and the very old, and is recognized as the ninth leading cause of death in the U.S. (Baron-Epel, Bord, Habib, & Rishpon, 2012; Centers For Disease Control And Prevention, 2013a; Clark, Cowan, & Wortley, 2009; Falomir-Pichastor, Toscani, & Depointes, 2009; National Foundation for Infectious Diseases, 2008). Nurses have been associated with the transmission of influenza within healthcare facilities due to lack of vaccination and coming to work while ill (Friedson, 2006). Annual vaccination for influenza is recognized as the most effective way of preventing infection (World Health Organization, 2009) and the United States (U.S.) Advisory Committee on Immunization Practices (ACIP) has recommended vaccination of healthcare workers for more than 30 years (Willis & Wortley, 2007). In spite of this, the rate of vaccination among healthcare workers has remained below the target of 90% set forth by Healthy People 2020 and rates among nurses have historically remained below rates of physicians (Clark et al., 2009; U.S. Department of Health and Human Services, 2012). Rates of healthcare workers' vaccination for influenza during the 2009-10 H1N1 pandemic only reached 37% and in prior years, rates have been reported as ranging from 36% to 52%, varying by professional group (Henriksen Hellyer et al., 2011). The Centers for Disease Control and Prevention (CDC) reported in early November, 2013, vaccination rates of healthcare workers of 62.9% overall, with rates for physicians of 84.3% and for nurses, 79.3% (Centers for Disease Control and Prevention, 2013b). These numbers are moving in the right direction, but more must be done if we are to reach the 90% Healthy People 2020 target.

Mandatory vaccination of healthcare workers against seasonal influenza has been recommended by many, stating that there is an ethical obligation to protect patients owned by healthcare professionals (Converso, O'Neal, & Olsen, 2010; Friedson, 2006). In February of 2012, the National Vaccine Advisory Committee (NVAC) strongly recommended that healthcare organizations and employers mandate vaccination for their employees if a voluntary program of vaccination yields less than a 90% rate (Lowes, 2012). Since then, over 400 health care institutions have implemented some type of mandatory influenza vaccination policy (Immunization Action Coalition, 2014). Vaccination rates of healthcare workers whose employers require influenza vaccination as a condition of employment are nearing the 90% target (88.8%) but those working for employers that do not have such a policy are only half the above rate (44.3%)(Immunization Action Coalition, 2014). Mandatory influenza vaccination programs, however, have met with some resistance from unionized healthcare workers. Such was the case when New York State ordered healthcare workers to be vaccinated during the pandemic influenza outbreak in 2009-10, only to have to reverse the order due to action from unionized healthcare workers (Lowes, 2012). The New York State Nurses Association (NYSNA) issued a position statement that supports voluntary vaccination for nurses but not mandatory vaccination (New York State Nurses Association, 2012). The American Nurses Association (ANA) strongly recommends nurses become vaccinated, and yet they too, stop short of endorsing mandatory vaccination (American Nurses Association, 2012). While mandatory vaccination policies are increasing, there remain many institutions that do not mandate influenza vaccination for their healthcare workers, and the need continues for other strategies to be employed to improve the rate of vaccination of registered nurses for seasonal influenza.

Statement of Purpose

Multiple studies examining the reasons that nurses accept or refuse the seasonal influenza vaccination have shown that there are similarities in the reasoning used by nurses when making a decision of whether to accept or refuse the influenza vaccination (Baron-Epel, Bord, Habib, & Rishpon, 2012; Bautista, Vila, Uso, Tellez, & Zanon, 2006; Brewer et al., 2007; Brewer & Hallman, 2006: Clark, Cowan, & Wortley, 2009; Falomir-Pichastor, Toscani, & Depointes, 2009; Friedl, Aegerter, Saner, Meier, & Beer, 2012; Henriksen Hellyer et al., 2011; Hoffman, Ferracin, Marsh, & Dumas, 2006; Hunt & Arthur, 2012; Kraut, Graff, & McLean, 2011; Milner, Eichold, Franks, & Johnson, 2010; Ofstead, Tucker,, Beebe, & Poland, 2008; Prematunge et al., 2012; Rakita, Hagar, Crome, & Lammert, 2010; Shahrabani, Benzio, & Yom Din, 2009; Tagajdid et al., 2011; Talbot & Talbot, 2013; Willis & Wortley, 2007; Zhang, While, & Norman, 2011; Zhang, While, & Norman, 2010). Clark et al. (2009) in a cross-sectional survey of 2000 registered nurses in four U.S. states found that the most common reason for acceptance of the seasonal influenza vaccine was for personal protection while protection of patients was also a frequently given response. The nurses who received the seasonal influenza vaccination were also more likely to consider the patient population they cared for as at high risk for influenza and it's consequences. Conversely, the reason RN's most commonly gave for not being vaccinated was fear or "concern about adverse reactions"(Clark et al., 2009, p.554). Nurses who received the influenza vaccine annually were found to be more knowledgeable about the risk of influenza, its complications, risk of side effects or adverse effects, risk-benefit of vaccination, effectiveness of the vaccine, and risk of contracting influenza for healthcare workers and patients. In addition, they were more were likely to feel they had a professional duty to get vaccinated annually than those who were not vaccinated (Clark et al., 2009).

The literature supports the needs for RN influenza vaccination and the benefits of education interventions increasing the likelihood of vaccination (Baron-Epel, Bord, Habib, & Rishpon, 2012; Bautista, Vila, Uso, Tellez, & Zanon, 2006; Brewer et al., 2007; Brewer & Hallman, 2006: Clark, Cowan, & Wortley, 2009; Domrose, 2013; Falomir-Pichastor, Toscani, & Depointes, 2009; Friedl, Aegerter, Saner, Meier, & Beer, 2012; Henriksen Hellyer et al., 2011; Hoffman, Ferracin, Marsh, & Dumas, 2006; Hunt & Arthur, 2012; Kraut, Graff, & McLean, 2011; Milner, Eichold, Franks, & Johnson, 2010; Ndiaye et al., 2005; Ofstead, Tucker,, Beebe, & Poland, 2008; Prematunge et al., 2012; Rakita, Hagar, Crome, & Lammert, 2010; Shahrabani, Benzio, & Yom Din, 2009; Tagajdid et al., 2011; Talbot & Talbot, 2013; Willis & Wortley, 2007; Zhang, While, & Norman, 2011; Zhang, While, & Norman, 2010). Therefore, the purpose of this doctor of nursing practice (DNP) capstone project was to evaluate the effect of an educational intervention provided to registered nurses (RNs) that would address the knowledge deficit related to risks of influenza to individual nurses, their families, and patients, and the myths and misconceptions regarding vaccine safety and efficacy, on the rate of RN vaccination for seasonal influenza.

PICO Statement and Research Question

This was an evidence-based practice (EBP) DNP project in which an educational intervention was developed and implemented. The project was internal to healthcare facility and informed the facility of issues in health care quality, cost, and satisfaction. This project addressed a specific population, at a specific time, in a specific facility. EBP projects aim to translate and apply the science of nursing to the health care field. EBP Projects using the acronym “PICO” rather than using a hypothesis. PICO stands for: P – Population or disease; I – Intervention or

Issue of Interest; C – Comparison or Current Practice; and O – Outcome. (Melnyk & Fineout-Overholt, 2011, p. 31).

The PICO question for this DNP capstone project was: In registered nurses working in a large urban medical center, located in a south central state (P), how does an educational intervention providing evidence-based information on the risks of influenza, the efficacy of the vaccine and the risks of side effects from the vaccine (I) compared to no educational intervention (C) influence the rate of nurses accepting the seasonal influenza vaccine (O)?

Project Significance, Scope and Rationale

The investigator in this project works in a large health care system where a mandatory influenza vaccination policy was recently implemented. However, influenza vaccination for health care workers in the community still remains a challenge and at a large urban veteran's administration medical center located in the investigator's state, influenza vaccination for healthcare workers remained voluntary. RN vaccination rates for the 2012-2013 influenza season were reported to be 40% (P. Lal, personal communication, May 20, 2014). Studies that modeled the effects of vaccination of healthcare workers have been shown to significantly reduce hospitalized patient morbidity and mortality (Music, 2012; Talbot et al., 2010). Additional studies have shown vaccination of healthcare workers to significantly reduce absenteeism (Music, 2012; Talbot et al., 2010), further benefitting patients in hospitals by ensuring an adequate number of nurses at the bedside. The facility employed approximately 982 registered nurses during this timeframe. This project aimed to improve the rate of RN vaccination for seasonal influenza through an evidence-based educational intervention that addressed the common reasons given by nurses for not being vaccinated. The nurse-sensitive and organization-

sensitive outcome, had the potential to positively impact the health of nurses, patients, the organization, and the community.

Theoretical Foundation and Change

The Health Belief Model (HBM) has been described as a framework that explains health related behaviors and provides a basis for the development of interventions that are aimed at changing health related behaviors (Champion, 1984; Champion & Skinner, 2008; Glanz, Rimer, & Lewis, 2002). The HBM was designed in the 1950's to help explain why government public health tuberculosis screening programs did not achieve success (Glanz, Rimer, & Lewis, 2002). Four basic constructs, as described by Glanz, Rimer and Lewis (2002), provide the basis of understanding why individuals decide to take action or not, related to preventing disease or improving health. These constructs include "perceived susceptibility, perceived seriousness, perceived benefits, and perceived barriers (p.31). The perceived seriousness of a disease or illness is described as the degree to which the condition would negatively affect an individual's situation, if it were to be contracted. The perception of susceptibility can combine with the perception of seriousness to motivate individuals to adopt a health related behavior. The higher the perceived risk of susceptibility, the higher the likelihood a person will adopt a behavior to reduce the risk to themself. The perceived benefit of the action implies that taking the action will decrease the risk to the individual and is also an important motivating factor in health behavior. Lastly, perceived barriers, or obstacles to an individual in making a behavior change, can create resistance or avoidance of health behaviors. For example, the perception of negative consequences for taking the action, such as pain, side effects, or inconvenience, create barriers that may cause an individual to avoid taking action. The magnitude of each of these create driving and restraining forces from which decisions to act are made (Champion and Skinner,

2008). These four constructs in the HBM align with stated reasons nurses give for accepting or refusing the flu vaccine (Brewer et al., 2007; Champion & Skinner, 2008; Kraut, Graff, & McLean, 2011; D'Souza, Zyngier, Robinson, Schlotterlein, & Sullivan-Mort, 2011; McEwen & Farren, 2005; Zhang, While, & Norman, 2011). Prematunge et al. (2012) found in a systematic literature review that when the vaccine was thought to be safe and effective in preventing infection of self and towards others, and that a belief that influenza was a serious illness, healthcare workers (HCW's) were more likely to be vaccinated. The access to information, communication from trusted sources, and encouragement from others to become vaccinated acted as positive cues to become vaccinated (Prematunge et al., 2012). These authors concluded that the influenza vaccination behaviors of HCW's are consistent with the HBM concepts, which include the perception of benefits, severity, susceptibility, barriers, and cues to action (Prematunge et al., 2012).

Brewer and Hallman (2006) studied the perception of risk and its role in influenza vaccination among those identified as high risk for influenza complications in 2004-2005 influenza season when the U.S. experienced a vaccine shortage. Of the 300 individuals surveyed, one half of those were not vaccinated because they did not perceive their risk as high (Brewer & Hallman, 2006). Those that did perceive their risk as high were more likely to be vaccinated, whether that risk was objective (they had a chronic health condition) or subjective (they merely believed they were at high risk) (Brewer & Hallman, 2006). Subjective risk was a more powerful predictor of vaccination for influenza than objective risk, and the authors concluded that the subjective belief of belonging to a high-risk group was more important in motivating vaccination behaviors than providing information on severity or risks of the illness (Brewer & Hallman, 2006).

A study that reviewed reasons given by 824 healthcare workers for not being vaccinated in Rhode Island obtained results that concur with the notions that they were not at risk from the effects of influenza and that the risk of side effects from the vaccine was too high (Marshall, Tetu-Mouradjian, & Fulton, 2010). Likewise, those that were vaccinated regularly for influenza perceived the benefit of vaccination such as the protection of self, family/friends, and patients from contracting influenza to be stronger than the risks from vaccination (Marshall et al., 2010).

These same HBM constructs provide direction for the intervention of this project, describing cues to act and motivation to act. Champion and Skinner (2008) described how the intensity of the cue for driving action might vary when considering a person's readiness to act. Simply put, the lower the readiness to act, the more intense the cue will need to be. Perceived risk of susceptibility, severity, benefits and barriers influence a person's motivation or readiness to act (Champion & Skinner, 2008). Prematunge et al. (2012) suggested that the literature provides direction to the development of interventions to improve vaccination rates for seasonal and pandemic influenza, and recommended

> educating HCW who refuse influenza about (1) the true risk of vaccine related side effect, (2) influenza vaccine effectiveness, (3) the importance of protecting self and others through vaccine uptake, and (4) the range of serious health risks a unvaccinated HCW can pose to themselves, their loved ones and patients can improve influenza vaccine uptake. (Prematunge et al., 2012, p. 4741) (See Appendix A).

Marshall, Tetu-Mouradjian, and Fulton (2010) suggested that healthcare workers who reject being vaccinated, may need more targeted interventions in order to change their behavior towards vaccination. One group reported that they would be more likely to be vaccinated if

personal risk or the seriousness of the risk was increased, such as if they, or a loved one were to develop a high risk health condition (Marshall et al., 2010). Others in the study reported that they would consider vaccination if it were mandated as a condition of employment or public policy (Marshall et al., 2010). A third group stated that even if vaccination were mandated, they were not willing to be vaccinated (Marshall et al., 2010). This group did not believe that vaccination for influenza was beneficial, or needed, and that it was potentially harmful (Marshall et al., 2010). Education and promotional campaigns were recommended as potential interventions for changing the behaviors of the first group toward vaccination, where mandatory policies may be needed to change the behavior of those in the second group, where "those who are resistant will need the force of law imposed upon them" (Marshall et al., 2010, p. 277). The last group may leave employment or the profession altogether were mandatory vaccination policies implemented, resulting in a recalibration of the healthcare workforce towards a workforce with values that align more closely with the actions and behaviors required for health professionals (Marshall et al., 2010).

An evidence-based project inherently includes a change in practice that is more likely to succeed when a change theory guides the process (Zaccagnini & White, 2011). Many consider Lewin's three-step model of planned change includes the concepts of unfreezing, moving, and refreezing as a sentinel model for change (Burnes, 2004; Coghlan & Brannick, 2003). The educational presentation of this project constituted the first step of Lewin's change model; unfreezing. According to Burnes (2004), Lewin believed that in order for change to occur in human behavior, something needed to occur to create a sense of disequilibrium. Lewin (1951) described how change occurs by the interaction of "forces" (p. 83), and that these forces are influenced by the "needs of the individual, his valences, values and hopes" (Lewin, 1951, p. 83).

These forces then move the individual towards a change or away from a change (Lewin, 1951). The following concepts form the three steps of change; unfreezing, moving, refreezing (Burnes, 2004; Coghlan & Brannick, 2003). Within the step of unfreezing, are processes that closely parallel the concepts described in the Health Belief Model (HBM); debunking the status quo, creating a sense of guilt or survival anxiety, and providing a sense of psychological security (Burnes, 2004; Champion & Skinner, 2008). These concepts have recognizable similarities to the HBM in creating the readiness to act or motivation to change in the individual, and the perceived benefits of acting or perceived risks of not acting. By providing the information on risks of influenza to self and others, the efficacy of the influenza vaccine, and debunking the myths surrounding influenza and the vaccine risks and side effects, this investigator hoped to create a cue to act or motivation to change. Following the unfreezing stage, the phase of change may begin to occur as people begin to feel uncomfortable about the status quo and consider a different way of doing things (Burnes, 2004). As described by the HBM, if individuals are to accept that change is necessary, it is important for them to see that there is a benefit in making the change (Burnes, 2004). The benefits to the participants as individuals and to others by influenza vaccination were included in the presentation. The final stage of change, refreezing, begins to occur when the new behavior becomes the norm (Burnes, 2004). The stage of refreezing was beyond the scope of this project, but it is hoped that initial behavior changes would occur and through refreezing, influenza vaccination rates will continue to improve in each year following the completion of the project.

Review of Evidence

Systematic Review of the Literature

In order to guide the development and refinement of the PICO question, and to identify possible interventions to improve RN influenza vaccination rates, a systematic review of the literature (SROL) was conducted. Several search engines were utilized for the SROL including the Cochrane Library, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Google Scholar, JSTOR, MEDLINE, and PubMed. Search methods included key word searches for words such as influenza, vaccination, vaccination rates, health care workers, nurses, knowledge, risk perception, decision making, health behaviors and professional responsibility both as individual words and collectively. Additional parameters such as English language, full text articles and published dates between 2002 and 2013 were used. National websites for government documents on influenza such as the Centers for Disease Control and Prevention (CDC) and other professional organizations such as Advisory Committee on Immunization Practices (ACIP) and the American Nurses Association (ANA) were also included in the literature review. Literature pertaining to the population characteristics of registered nurses was reviewed in order to understand the demographic and health status of the targeted population. The systematic review assessed each journal article for research design, level of evidence, study aim or purpose, population, sample size, primary outcome measures and results, strengths and limitations, and author conclusions and implications of findings. The resulting SROL helped to identify key concepts related to RN vaccination behaviors, and identified areas for further research regarding this capstone project's topic. The initial search yielded 62 scholarly articles that had relevance to the project. Fifty-two articles were selected following this review. There were twenty-six quantitative studies, which included 10 cross-sectional surveys, 11 correlational, one longitudinal, one case control, one quasi-experimental using pretest - posttest design, and one experimental randomized control trial design. Ten Qualitative studies comprised of four

focus group, four interview, and two grounded theory designs were included in the SROL. Two meta-analyses were included in the SROL. There were seven articles that were large review of literature studies on the capstone topic, and six expert opinion articles, each providing the evidence that informed the development and execution of this project.

The literature reports consistent themes for the reasons registered nurses accept or refuse a seasonal influenza vaccination such as desire for personal protection or family protection when accepting the vaccination, and a lack of concern for the risk of influenza, a lack of understanding of the risks of adverse effects from the vaccine, and a lack of perception of efficacy of the vaccine when refusing the vaccination (Baron-Epel, Bord, Habib, & Rishpon, 2012; Bautista, Vila, Uso, Tellez, & Zanon, 2006; Brewer et al., 2007; Brewer & Hallman, 2006: Clark, Cowan, & Wortley, 2009; Falomir-Pichastor, Toscani, & Depointes, 2009; Friedl, Aegerter, Saner, Meier, & Beer, 2012; Henriksen Hellyer et al., 2011; Hoffman, Ferracin, Marsh, & Dumas, 2006; Hunt & Arthur, 2012; Kraut, Graff, & McLean, 2011; Milner, Eichold, Franks, & Johnson, 2010; Ofstead, Tucker,, Beebe, & Poland, 2008; Prematunge et al., 2012; Rakita, Hagar, Crome, & Lammert, 2010; Shahrabani, Benzio, & Yom Din, 2009; Tagajdid et al., 2011; Talbot & Talbot, 2013; Willis & Wortley, 2007; Zhang, While, & Norman, 2011; Zhang, While, & Norman, 2010).

Henriksen Hellyer et al. examined attitudes of over 1,000 physicians and nurses towards influenza vaccination during the 2009-10 H1N1 pandemic and found similar reasons for acceptance or refusal of vaccination. While rates of vaccination differed significantly between physicians and nurses (85 percent versus 62 percent respectively), the reasons for being vaccinated were most commonly reported as self–protection for both nurses and physicians (Henriksen Hellyer et al, 2011). Nurses who refused to become vaccinated gave personal choice

and concern or fear of side effects as their most common reason, while physicians who were not vaccinated were more likely to report personal choice and lack of concern about contracting influenza as reasons (Henriksen Hellyer et al, 2011). The sources of information that were relied upon for influenza vaccination differed between nurses and physicians. Nurses most commonly cited mass media as their source of information, whereas physicians relied on professional publications and public health agencies (Henriksen Hellyer et al, 2011). Physicians reported less concern about side effects of the vaccine and were more accurate in the estimation of risk of adverse effects than nurses (Henriksen Hellyer et al, 2011). While a majority of both groups reported a professional responsibility to protect patients and become vaccinated, physicians more strongly felt there was an ethical responsibility to become vaccinated and that vaccinations should be mandated if rates were not acceptable through voluntary means (Henriksen Hellyer et al. 2011).

Baron-Epel, Bord, Habib, and Rishpon (2012) in a qualitative study with a convenience sample of 25 pediatric nurses utilized focus groups to examine reasons that nurses give for refusing vaccination. Two major themes for nurses' refusal were identified 1) a lack of trust in the organization and 2) the belief that personal autonomy outweighed professional responsibility (Baron-Epel et al., 2012). Two minor themes for nurses' refusal were also reported, and were 1) that the nurses felt that influenza posed a low risk to themselves and others, and 2) they had a high fear of side/adverse effects from the vaccine (Baron-Epel et al., 2012).

Milner, Eichold, Franks, and Johnson (2010) in a voluntary survey of 426 healthcare workers in a public health department, examined reasons given by those not vaccinated for influenza. Fear of needles, fear of getting sick from the vaccine itself, a lack of belief in vaccine efficacy, a lack of perception of vaccination as a health related behavior, and younger age were

all highly predictive of noncompliance with vaccination (Milner et al., 2010). The study concluded that those who were not vaccinated were significantly less knowledgeable than those who were vaccinated, and suggested that efforts to improve vaccination rates should include debunking of the myths and misconceptions surrounding the vaccine efficacy and safety, as well as educating healthcare workers to the benefits of vaccination such as less sick time used from influenza (Milner et al., 2010).

Rhudy, Tucker, Ofstead, and Poland (2010) in a qualitative study interviewed nurses who had identified themselves as either uncertain about, or would not accept the influenza vaccination, in an attempt to understand what factors influenced their decisions. These interviews led to development of the theme that the nurses did not see immunization for influenza as a personal priority. The nurses interviewed felt that they were in good health, were skeptical of the effectiveness of the vaccine, had a fear of side effects, getting vaccinated was inconvenient, and thought that hand washing was enough of a preventative measure to protect themselves and patients (Rhudy et al., 2010). These authors concluded that the nurses considered vaccination as a choice rather than an evidence based intervention that would protect patients and improve outcomes (Rhudy et al., 2010). Their recommendations for future practice included educating nurses about the evidence about influenza (Rhudy et al., 2010).

A lack of knowledge regarding influenza and its effect on decision making regarding was found among nurses in a study conducted in a large tertiary medical center (Ofstead, Tucker, Beebe, & Poland, 2008). The study's authors found that responses to questions regarding knowledge of influenza, influenza vaccine and its effectiveness were frequently incorrect (Ofstead et al., 2008). Intent to receive vaccination was strongly related to the knowledge that the vaccine could not cause influenza (Ofstead et al., 2008).

Zhang, While, and Norman (2011) in a cross-sectional survey of 522 nurses enrolled in continuing education courses in a London, England university found similar levels of knowledge and perception of risk regarding influenza and annual vaccination as the previous studies. They found that nurses with a high knowledge level regarding influenza and the effectiveness, risk of side effects and risk of influenza among the population were more likely to be vaccinated (Zhang et al., 2011). Stated predictors of vaccination uptake were associated with a perception of a vulnerability to influenza, risk of mortality from influenza, and the likelihood of transmitting influenza to patients (Zhang et al., 2011). As with previous studies, the number one reason for accepting the flu vaccination was personal protection and the number one reason for not being vaccinated was fear of side effects (Zhang et al., 2011). Similar to other studies, the implications for future campaigns to address vaccination rates relate to the need for more emphasis on benefits to the "nurse's personal and family health benefits" (Zhang et al., 2011, p. 1287). While other studies evaluated nurses' attitudes and behaviors, the results were consistent with the previous mentioned studies (Baron-Epel et al., 2012; Friedl, Aegerter, Saner, Meier, & Beer, 2012; Kraut, Graff, & McLean, 2011; McEwen & Farren, 2005; Willis & Wortley, 2007).

Multiple studies advocate the use of an educational intervention to address the reasons why nurses refuse the influenza vaccination as a method to improve their vaccination rates (Clark, Cowan, & Wortley, 2009; Falomir-Pichastor, Toscani, & Depointes, 2009; Kraut, Graff, & McLean, 2011; Ndiaye et al., 2005; Rhudy, Tucker, Ofstead, & Poland, 2010; Shahrabani, Benzio, & Yom Din, 2009; Talbot & Talbot, 2013; Zhang, While, & Norman, 2011). Likewise, Kraut, Graff, and McLean (2011) recommended the development of educational interventions that would debunk myths and misconceptions regarding influenza vaccines while emphasizing personal benefits to improve healthcare worker influenza vaccination rates. Other authors, such

as Rhudy, Tucker, Ofstead, and Poland (2010) developed strategies that targeted improving influenza vaccination rates in healthcare workers, the first of which was to provide educational programs that "emphasize influenza vaccination as a patient safety initiative...and address myths of influenza"(p. 118). Talbot and Talbot (2013) urged the continued education of healthcare workers by providing evidence based information on the efficacy of vaccines, the seriousness of influenza, the risk of vaccine side effects, and lack of perceived susceptibility to refute the reasons often cited for not receiving a vaccination in order to improve vaccination rates. Many studies were not included in this review of the literature because they were outside of the date range determined to be within the past 10 years, but had similar findings and recommendations for changing vaccination behaviors of healthcare workers. The SROL was helpful in identifying gaps that exist in the evidence. For example, there is a lack of evidence for what specific intervention(s) are most successful in improving knowledge in nurses, what techniques are most effective in debunking myths and misconceptions surrounding influenza and the influenza vaccines, and if there are differences between the characteristics of nurses who are vaccinated and those who are not vaccinated. This project utilized the aforementioned evidence, recommendations, and identified gaps to inform the development of an educational intervention to test whether providing factual information about influenza and its risks, while dispelling the myths and misconceptions regarding influenza and its vaccines, would improve RN influenza vaccination rates.

Project Plan and Evaluation

Market and Risk Analyses

When developing strategies to address community needs, analysis of the prevailing

market conditions has proven helpful (Workgroup for Community Health and Development at the University of Kansas, 2013). Market conditions for this project were defined as the behaviors and beliefs of nurses who accept or decline seasonal influenza vaccination. This information informed the development of the intervention for this project. Strategies based on the current literature were utilized in an attempt to reduce the barriers to and increase the benefits of vaccination.

Project Strengths, Weaknesses, Opportunities, and Threats

Conducting an analysis of a project's strengths, weaknesses, opportunities and threats (SWOT analysis) of the internal and external factors that might affect its outcome can be helpful when developing a project plan (Workgroup for Community Health and Development at the University of Kansas, 2013). Because resistance to change is to be expected in any project, completing a SWOT analysis allows one to strategically plan for a change, through exploration of new solutions and setting priorities for the chosen strategies, after identifying the existing opportunities. The SWOT builds on strengths, limits weaknesses, exploits opportunities and mitigates threats to a project (Workgroup for Community Health and Development at the University of Kansas). (Table 1).

Table 1. SWOT Analysis

SWOT Analysis

An Evidence Based Educational Intervention to Improve Vaccination Rates for Seasonal Influenza among Registered Nurses

Strengths

- Potential for Decreased transmission of Influenza
- Potential for Decreased hospitalizations for Influenza
- Potential for Decreased deaths from Influenza
- Potential for Decreased RN absenteeism/time off for illness/influenza
- Potential for Decreased Salary expense to institution due to replacing sick RN's with influenza
- Large sample size of RN's at facility (900)
- High desire by agency leadership for improvement - previous year's vaccination rate between 50 - 60 % for RN's
- High motivation of investigator

Weaknesses

- Potential for lack of RN participation
- Potential for no change in vaccination rates
- Difficult to assess number of RN's who received vaccination after intervention and those who did not receive last year
- Complexity and size of facility for intervention
- Possible low employee interest / compliance with voluntary vaccination in past
- Bureaucratic government agency with many layers of rules and regulations for employee programs
- Short time frame to educate many RN's
- Education alone may not achieve desired result

Opportunities

- New materials from CDC on influenza education
- New vaccines and delivery methods
- Improved efficacy of vaccines
- Improved safety of vaccines
- New influenza strain/pandemic
- Provision of continuing education (CE) credits to entice participation

Threats

- Vaccine shortages possible
- IRB approval not granted in time frame needed
- Available time for investigator to provide presentation due to primary job/ scheduling issues
- Early influenza season
- Media coverage of adverse effects of vaccines
- Misinformation in media regarding vaccine safety and efficacy
- New influenza strains/pandemic

Potential strengths of this project included a high degree of interest and motivation by the agency to improve the rate of RN vaccination for influenza, which led to a high degree of support for this project. Potential benefits included improved community health and if vaccination rates were improved, reduced cost to the agency due to less absenteeism. Potential weaknesses included the challenge of getting a large number of RNs to participate, working within a large, bureaucratic agency with complex processes, and having a short time frame to implement the educational intervention. Threats to the project included the potential for an early influenza season, possible vaccine shortages and potential issues with obtaining needed approvals in the timeframe necessary prior to the onset of influenza season. Opportunities such as incorporating CDC provided materials into the presentation and providing continuing education (CE) credits were used to mitigate the weaknesses and threats.

Driving and Restraining Forces

Lewin's theory of planned change is built upon the concepts of driving forces, or those forces that drive towards a change, and restraining forces, or the forces that exist that resist a change (Lewin, 1951, Burnes, 2004). Burnes (2004), stated that Lewin believed the status quo is a result of the interaction of these two forces and that in order for change in the status quo to occur, one must either increase the strength of the driving forces or decrease the restraining forces.

When attempting to understand the reasons why people resist or accept change, it is helpful to know what the person's experiences have been and what they value. This project attempted to change behaviors of registered nurses who previously have not received an influenza vaccination. Therefore, learning about their previous experiences with the influenza vaccine, their experiences with contracting influenza or knowing someone who has in the past

was considered when this author created the message delivered in the educational presentation.

The values of registered nurses are described in the American Nurses Association's (ANA) Code of Ethics for Nurses. They include compassion, respect for individuals, a commitment to the patient, advocating for health and protection of the patient, preservation of health, and self-integrity to maintain their own health (American Nurses Association, 2001). Driving forces may include those that motivate the nurse to remain healthy, keep his/her family healthy, and promote health and safety of the patient, knowledge about influenza and it's risks to self and others, and knowledge of risk of adverse effects from vaccination. Restraining forces may include inconvenience, cost, fear of adverse effects, fear of needles, and knowledge deficit of influenza and its risks, and of lack of knowledge of vaccine risks. These are the forces and the values that provided guidance to the development of the intervention for this project.

Need, Resources, and Sustainability

The need for improved vaccination rates among registered nurses has been established by the World Health Organization (WHO), the CDC, and ACIP as a way to decrease transmission and deaths from influenza (Centers for Disease Control and Prevention, 2012; Willis & Wortley, 2007; World Health Organization; 2009). Additionally, the leadership at the agency expressed a desire for an improvement in vaccination rates for their healthcare workers. Influenza vaccination rates for this facility were 40% for RNs, and 37% overall for the 2012-13 influenza season (P. Lal., personal communication, May 20, 2014).

The resources required to implement this project were basic and required minimal outlay of financial resources. The most significant resource was the time the investigator required to develop and present the educational intervention and to provide follow up and data analysis. Other resources included audio-visual equipment from which to project the presentation, and the

time for each RN to attend the presentations (one hour). Existing conference rooms were utilized and the presentations were scheduled during the available times and dates that the agency leaders believed were the most conducive to attendance. Additional time was required by the investigator in order to apply for and obtain continuing educational credits for the RNs attending the presentation. This activity was supported by the investigator's employer and was free of charge. The intervention was conducted at the facility and there were no direct costs for use of the facility meeting rooms, or for the time/salary costs for the presenter. Costs related to the printing of handouts, participant forms, data collection sheets, gasoline for travel to and from the project facility, and statistical analysis software rental, were incurred by the investigator. (See Appendix B). A statistician was consulted and provided services at no charge.

A copy of the slide presentation was provided to the agency employee health leader for future use, thus allowing for the sustainability of the project as a resource for continued use to educate employees on influenza and influenza vaccination. Follow up with agency on findings and recommendations by this author for future consideration were provided and also serve to promote sustainability.

Feasibility, Risks and Unintended Consequences

Completion of this project was feasible within the academic program time frame for completion by August of 2014 (See Appendix C). This project was provided with significant support from faculty at Regis University who helped to accelerate the timeframe in which the proposal was advanced through Institutional Review Board (IRB) review, so that implementation could occur within the onset of 2013-14 influenza season (October-November, 2013).

A recognized risk to this project included the potential for a lack of participation from nurse's attendance at the presentation intervention. A power analysis was performed in order to

determine an acceptable sample size given the project's design. Professional continuing education credits were obtained as an added incentive to achieve the desired sample size.

An unintended consequence from this project may have resulted if there were punitive actions towards nurses who were not vaccinated, and the tactics taken to mitigate these included reporting of results only in the aggregate, providing a method to de-identify individual participant's responses (use of a unique number instead of names on data collection sheets), and limiting data access to only the investigator and one other facility employee.

Stakeholders and Project Team

Zaccagnini and White (2011) defined stakeholders as "individuals who are not only affected by the work but who may have an interest in its outcomes"(Zaccagnini & White, 2011, p.460). Stakeholders may be both internal to the organization and external. In this project, key stakeholders were identified as the Chief Nursing Officer (CNO) of the facility and facility leaders such as the Associate Chief Nursing Officer (ACNO)/Director of Employee Health, Nurse Managers and other facility leaders. Nurses providing direct patient care and their patients were also considered key stakeholders. External stakeholders included regulatory agencies such as The Joint Commission (TJC) and the Center for Medicare and Medicaid Services (CMS), the American Nurses Association (ANA) and other professional organizations, community public health departments, and the community at large.

The project team consisted of this investigator, the ACNO overseeing the Employee Health services, the facility influenza vaccination team leader, and nurse managers who facilitated the attendance of staff nurses at the presentations. In addition, the investigator's mentor, capstone chairperson, and statistician were all vital members of the project team.

Cost/Benefit Analysis

The vaccination of working adults has been shown as cost effective for employers (Duncan, Taitel, Zhang, & Kirkham, 2012; Music, 2012; Walton, 2012). The vaccination of workers for influenza has been shown to prevent absenteeism and lost productivity due to working while ill (Duncan, Taitel, Zhang, & Kirkham; Music; Walton). Additionally, cost to health plans for visits to physician offices for influenza and influenza like illnesses (ILI) have been shown to decrease following an employee vaccination program ill (Bridges et al.; Duncan, Taitel, Zhang, & Kirkham; Nichol). Flu Prevention Partners, a division of Workplace Vitality, a workplace wellness program provider, developed a web-based calculator to estimate the cost/benefit of influenza vaccination of employees (Flu Prevention Partners, 2013). Utilizing this tool and applying it to the agency population of 982 registered nurses, assuming that 55% will be vaccinated (previous vaccination rate was 40%) with a 60% vaccine efficacy and cost of vaccine of $30.00 per vaccination an estimated savings for the facility would be $15,210.29 and a 48% return on investment. Benefit from vaccination increases with increased numbers of those vaccinated (Flu Prevention Partners). Lastly, the Centers for Disease Control and Prevention (2013c) estimate that if 70% of the population were to be vaccinated for influenza there would be 30,000 less hospitalizations and 1.8 million fewer individuals who sought medical attention and care for influenza each year. With each additional person vaccinated for influenza, the incidence of illness and death from influenza is reduced, and associated healthcare costs are decreased (Centers for Disease Control and Prevention, 2013c). It is clear that there would be significant benefits to healthcare workers, patients, healthcare organizations, and to society if RN vaccination rates for seasonal influenza were to improve.

Mission

The mission of this project was to improve the rate of registered nurses who receive the seasonal influenza vaccine which will in turn, decrease the transmission of influenza and improve patient outcomes.

Vision Statement

The vision statement for this project was: to improve patient outcomes by impacting registered nurse behaviors.

Goals and Objectives

Zaccagnini and White (2011) define a goal as something that broadly directs a project and helps to define the desired outcome of a project. Objectives are the actions or tactics that drive a project towards meeting the goal or desired outcome. Objectives written in the SMART (specific, measurable, attainable, realistic, and timely) format provide a useful format for the author (Zaccagnini & White). Below are the stated goal and corresponding objectives for the project:

Goal

1. The primary goal of this project was: To effect a change in RN vaccination behavior and improve the rate of vaccination for seasonal influenza.

Project Objectives

Objective 1. Develop and implement an evidence-based educational intervention that provides information regarding seasonal influenza and its risks and addresses the reasons or rationales given by RNs who refuse seasonal influenza vaccination.

Objective 2. Evaluate the vaccination status of participant RNs, following the proposed intervention at the end of the 2013-14 influenza season, to determine if a change

(increase) from 2012-13 influenza season vaccination status occurred.

Objective 3. Evaluate the demographic characteristics of the participating RNs for possible correlations with vaccination behaviors, following the proposed intervention at the end of the 2013-14 influenza season, in order to make recommendations for future interventions to the administration at the project facility.

Process Objectives

a. Initiate and develop a relationship with key stakeholders at facility in order to obtain permission to conduct project at site by the end of July 2013.

b. Obtain approval of facility IRB/Research Committee to conduct project at site by August 1, 2013.

c. Initiate and complete application for project to Regis University IRB by September 1, 2013.

d. Receive approval from Regis University IRB to conduct project at facility by October 1, 2013.

e. Develop formal written proposal for project and present to faculty at Regis University by October 31, 2013.

f. Develop presentation based on evidence on reasons registered nurses give for not receiving influenza vaccination in PowerPoint by September 1, 2013.

g. Obtain Continuing Education credit approval for presentation by time of offerings.

h. Present intervention/presentation to registered nurses working at the facility over multiple dates and times during the months of October, November and December 2013.

i. Collect and analyze the data obtained from the project including registered nurse vaccination rates for the 2012-13 and 2013-14 influenza seasons, and demographic data by the end of July 2014.

j. Develop written report of findings and project outcomes and with the intention to submit for publication to at least one professional journal by the end of December, 2014.

Logic Model

The W.K. Kellogg Foundation (2004) developed a program logic model to help define and provide a picture of what work is being planned by a person or an organization including theories and assumptions that underscore the program or project. The logic model ties outcomes, short term and long term, with the activities, processes, and resources used in implementation of the project or program. A logic model was developed for this project (See Appendix D).

Population

The population for this project included all RNs currently working at the DNP project site, during the 2013-14 influenza season. This population was expected to closely resemble the larger population of nurses in the project state: mostly Caucasian, female, forty-six years old, with an Associate's Degree in Nursing (Texas Center for Nursing Workforce Studies, 2013; U.S. Department of Health and Human Services Health Resources and Services Administration, 2010). The project sample participants were those RNs who attended the educational presentations given by the investigator and who returned the participant information sheet following the presentation.

Power analysis and Effect Size

Polit (2010) recommends a power of 0.80 as an acceptable risk for a Type II error and states convention provides for significance criterion at 0.05. As there is not an effect size that should be considered based on past research, a medium effect size was chosen for this project. For a 2-tailed correlational study with a power of .80 and alpha of .05, a population correlation coefficient between .30 and .49 would be considered a medium effect size. Given these parameters, the desired sample size for this test was 65 (Polit, 2010).

Setting

The setting for this project was a large urban veteran's affairs medical center that employs 900 - 1000 registered nurses in the south central region of the United States. It provides inpatient and ambulatory health services to patients from across the region. Vaccination of employees for seasonal influenza is a voluntary and free of charge benefit. Methods to provide vaccinations to employees include the holding of vaccination clinics each day during influenza season, and the deploying of mobile vaccination carts to individual nursing units. The 2012-13 influenza season's vaccination rate for registered nurses was 40%, well below the national average (77.9%) and Healthy People 2020 target of 90 percent (Centers for Disease Control and Prevention, 2013b; U.S. Department of Health & Human Services, 2013).

Evidence Based Project Design, Methodology, and Measurement

This DNP capstone project was an evidence based practice project which consisted of developing and implementing an educationa intervention on influenza for registered nurses and analyzing the RN subject's influenza vaccination status pre and post intervention to determine if there was a change following the intervention.

The outcome or dependent variable for this project is the status of RN vaccination for the seasonal influenza. The independent variable is the evidence-based educational intervention aimed at improving knowledge related to a) risks of influenza, b) the effectiveness of the seasonal influenza vaccination, and c) the risk of adverse effects of the vaccine. The educational intervention for this project included these three key factors because they have been reported consistently in the literature as predictors of nurses' behavior related to acceptance or refusal of vaccination against influenza (Baron-Epel et al.; 2012; Clark et al., 2009; Falomir-Pichastor et al.; 2009; Friedl et al.; 2012; Henriksen Hellyer et al., 2011; McEwen & Farren, 2005; Willis &

Wortley, 2007; Zhang et al., 2011). This project utilized these as the basis for the implemented educational intervention to improve RN influenza vaccination rates.

Protection of Human Subjects Rights

Institutional Review Board (IRB) approval was obtained from the project facility IRB and from Regis University IRB as an exempt study in August and September of 2013, respectively (See Appendices E and F). The investigator completed the Collaborative Institutional Training Initiative (CITI) certification prior to beginning the project (See Appendix G). The responsibilities related to human subject protection includes the adherence to the basic ethical principles for conducting research that involve human subjects which are 1) respect for persons, 2) beneficence, and 3) justice (The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

The first principle, respect for persons was ensured by the fact that all participation was entirely voluntary. A manager at the facility posted fliers across the facility campus and in online communication to all nurses inviting them to attend. The study information sheet and invitation to participate was provided to all participants. Consent was implied when the participants completed and returned the demographic data sheet to the study investigator (See Appendices H1-2). Autonomy was protected, as all RN's who were invited to participate were adults, and able to consent voluntarily. There were no adverse consequences for declining to participate in the project. The survey instrument contained no personally identifying data.

The principle of beneficence was ensured, as there was no risk of harm to the participants who took part in the project, which consisted of completing a demographic data collection sheet and attending an educational presentation that informed them about influenza and the seasonal vaccine. One hour of continuing education credit was provided to each nurse attending the

presentation as a benefit to participation. While some might argue that there are risks in taking the influenza vaccine, the actual vaccination of nurses was not in the scope of this project. In light of this, if the effect of improving one's knowledge about influenza leads to improved vaccination rates, then the possible benefits to society as a whole outweighs the risks, and benefits have been maximized while possible harm has been minimized, as outlined in the Belmont Report (The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

Lastly, the principle of justice was ensured as all nurses working in the facility were invited to participate. None of the subjects were part of a protected population and the intervention had no risk of harming anyone. The risk of unfairly treating or excluding anyone based on any trait was not in in question for this project.

Threats to Reliability and Validity and Intended Statistics

The project did not utilize an instrument to measure any study constructs, and as such, no reliability or validity assessments of an instrument were required. Because this was a non-probability convenience sample, threats to internal validity would include selection bias, testing, history, and maturation, although the latter two would be minimal (Terry, 2012). Threats to external validity would include generalizability if the sample size were too small or heterogeneous that results were not typical of the population as a whole. Selection bias may also have been a threat as those who choose to participate (volunteer) may be more likely to accept vaccination than those who do not and thus may not be representative of the greater population of RN's (Terry, 2012). The author attempted to minimize these threats through the project design and appropriate sample size.

This project aimed to determine if there is a difference in the vaccination status of RNs before and after an educational intervention on influenza was provided to participants. The rate of vaccination of all employed RNs for the 2012-13 influenza season was compared to the rate for the 2013-14 influenza season. The data collected included nominal level, ordinal and interval. The nominal level data included gender, race/ethnicity, whether the nurse was employed at the facility during the previous influenza season, and the dependent variable of the participant's influenza vaccination status for 2012-13 and 2013-14 influenza seasons. The ordinal level data included level of education. Interval data included age of participants, years of experience, and the overall influenza vaccination rates for the facility for the 2012-13 and 2013-14 influenza seasons. The McNemar's chi square non-parametric test for related samples was used for the analysis of nominal level dichotomous data (Grove, Burns, & Gray, 2013). Additional tests using Pearson's Product Moment (*r*) correlation were performed to determine if any associations existed between the variables of age, years of experience, level of education, and gender to vaccination rates. Correlational analyses provide information about the direction and size of a relationship between variables if one exists, and can serve as a way to make further inferences about the relationships for the population (Polit, 2010). Descriptive statistics were used to present information regarding the sample participants, and are reported as frequency, mean, median, and standard deviation, as indicated by the level of data.

Data Collection and Intervention Procedure

The educational intervention consisted of a 20 slide PowerPoint presentation that addressed the risks of influenza, the risks of side effects from vaccination, and efficacy of the vaccine (See Appendix I). The presentation was provided as an optional continuing educational activity at 12 separate, one hour, in-person events to organization-wide employees, on three

different dates (November 6, 7 and 13, 2013), over a two week period during the month of November 2013, at the participating site. The facility employed over 900 registered nurses at the time the project concluded in May, 2014. A total of 105 employees attended the presentations consisting of 88 RNs, 15 Licensed Vocational Nurses (LVNs) and two Certified Nursing Assistants (CNAs). While this project was designed to evaluate RN vaccination behavior following an educational intervention, any employee who wished to was allowed to attend the presentation, and this fact explains the difference in total attendees and actual sample size. Prior to beginning the presentation, each person attending was asked to sign an attendance sheet and was provided with an information sheet describing the study. They were then asked to complete a participant data sheet prior to the presentation. Each completed participant data sheet was assigned a random, unique identifier, linking it to the attendance roster, to allow comparison to previous year's influenza vaccination status. The role of each attendee was identified on the participant data sheet and so that those who were not RNs could be removed from the project sample and would not be included in the data analysis. Permission was implied by the completion of this questionnaire. The presentation was then given by the investigator. The presentation lasted approximately 45 minutes, with 15 minutes allowed at the conclusion of the presentation for questions, for a total of 60 minutes per presentation.

Data on overall vaccination rates and individual vaccination status for both influenza seasons were collected by the facility and the investigator, and vaccination status was reported in the aggregate to the investigator. No personnel files were provided to the investigator. In addtion, the vaccination status of the registered nurses who completed the education, and returned a participant data collection sheet was collected and reported to the investigator by the facility using the unique identifying number with individual names removed.

Project Findings and Results

Project Objective One

The evidence based educational intervention was developed and implemented as planned. It was presented to the project facility employees during November 2013. The dates and times for the presentations were posted around the facility and notices were emailed to all clinical staff. The attendees included not only registered nurses, but in addition, included licensed vocational nurses (LVNs) and certified nursing assistants (CNAs) as attendees. However, per study design only the RN attendees were included in the project sample for data analysis.

Descriptive Statistics

There were a total of 105 individuals who attended the educational intervention for this project. The attendees included 88 RNs, 15 LVNs and two CNAs. Of the attending RNs, a total of 64 returned completed participant data collection sheets, and from these, there were 58 RNs that had complete vaccination status reported for both the 2012-13, and 2013-14 influenza seasons. One of the 58 RNs had a documented anaphylactic allergy to influenza vaccines and was therefore excluded from the analysis. The remaining 57 RNs were included in the sample for data analysis. Demographic data revealed the sample to be mostly female (87.7%), with a BSN (48.3%), having an average of 24.8 years of experience, a mean age of 51 years, and were ethnically/racially diverse (33% Asian, 31% Black, 22% Caucasian, 7% Hispanic) (Tables 2. and 3.). The sample population was slightly older than RNs in the state of Texas whose mean age is 46 years old. Most (79.3%) had been employed at the study site during the previous influenza season.

Table 2. Participant Demographics

	N	Percent
Gender		
Male	7	12.3
Female	50	87.7
Race/Ethnicity		
Asian	19	33.3
African American	18	31.6
Hispanic	4	7.0
Caucasian	12	21.1
Other	2	3.5
Educational Level		
Diploma	2	3.5
Associate's Degree	7	12.3
Bachelor's Degree	27	47.4
Master's Degree	17	29.8

Table 3. Participant Age and Years of Experience

	N	Mean	Minimum	Maximum	Range	SD
Age	47	51.23	27	75	48	10.186
Years Experience	51	24.96	4	55	51	11.560

The majority of RNs were vaccinated during both the 2012-13 influenza season (n= 33, 57.9%), and the 2013-14 season (n = 34, 59.6%), an increase in vaccination frequency of 1.7% from the previous year (Table 4.). The vaccination rate for all employed RNs at the facility during the 2012-13 (previous) influenza season was 40%, and the vaccination rate for all employed RNs for the 2013-14 (current) influenza season was 38% (Table 5.). The total vaccination rate was higher than the rate of RN vaccination in the state of Texas (33.6%) (Texas Department of State Health Services, 2013) but far less than the average for RNs in the U.S. (79.3%) (Centers for Disease Control and Prevention, 2013b).

Table 4. RN Vaccination Status Before and After Intervention

	No	%	Yes	%	Total
2012-13 (Pre-Intervention)	24	42.1%	33	57.9%	57
2013-14 (Post-Intervention)	23	40.4%	34	59.6%	57

Table 5. Total (All Employed) RN Vaccination Rates Before and After Intervention

	RNs Vaccinated	Number of RNs	Vaccination Rate
2012-13	396	985	40%
2013-14	396	1038	38%

Inferential Statistics for Evaluation of Objective Two

The McNemar's χ^2 for related samples was used to test whether a there was a change in proportions in vaccination status' following the intervention as compared to vaccination status before the intervention. While there was an increase in vaccination status following the intervention, the change was not significant ($p = 1.00$). A post hoc power analysis was performed and resulted in a power of .046, meaning this study had a 95.4% chance of making a Type II error. Therefore, this sample did not achieve significant power to avoid rejecting the null hypothesis when it was false.

Inferential Statistics for Evaluation of Objective Three

Relationships of association between variables that might influence vaccination status both before (2012-13) and after the intervention (2013-14) were tested using the Pearson's Product Moment correlation. The largest level of association was found between vaccination

status (yes, vaccinated) pre-intervention and vaccination status (yes, vaccinated) post-intervention r (55) = .530, p = .000 (Table 6.).

Table 6. Correlation Between Vaccination Status Before and After Intervention

	Vaccinated (Yes) Before *and* After Intervention
Pearson Correlation	.530
Sig. (2-tailed)	.000
N	57

Age was significantly associated with being vaccinated in the pre-intervention influenza season r (45) = .383, p = .008, but not post-intervention (Table 7). Age had a small negative association with never being vaccinated (were not vaccinated before *and* after the intervention) r (45) = − .297, p = .043 (Table 7.).

Table 7. Correlation Between Age and Vaccination Status

		2012-13	**2013-14**
Age	Pearson Correlation	.383**	.054
	Sig. (2-tailed)	.008	.721
	N	47	47

** Correlation is significant at the 0.01 level (2-tailed).

Table 8. Correlation Between Age and Not Vaccinated (Never) Before and After Intervention

		Never Vaccinated
Age	Pearson Correlation	− .297*
	Sig. (2-tailed)	.043
	N	47

* Correlation is significant at the 0.05 level (2-tailed).

Two Race/ethnicity characteristics were significantly associated with vaccination status. Being of Asian race had a moderately negative association with vaccination status before the intervention r (55) = − .302, p = .023 (Table 9.).

Table 9. Correlation Between Asian Race/Ethnicity and Vaccination Status Before Intervention

		Vaccinated Before Intervention
Asian	Pearson Correlation	-.302*
	Sig. (2-tailed)	.023
	N	57

*Correlation is significant at the 0.05 level (2-tailed).

Interestingly, it was noted that none of the Asian RN's were vaccinated before the intervention. Following the intervention, seven became vaccinated and this change was found to be significant, McNemar's χ^2 statistic (p = .031) (Table 10.).

Table 10. Change in Asian RN Vaccination Status Following Intervention

	Pre-Intervention Vaccination Status	Post-Intervention Vaccination Status
Yes, Vaccinated	0	7
	N	19
	Exact Sig. (2-tailed)	.031

McNemar's χ^2
b. Binomial distribution used.

Caucasian race/ethnicity had a small positive association with vaccination status prior to the intervention r (55) = .266, p = .045 (Table 11.).

Table 11. Correlation Between Caucasian Race/Ethnicity and Vaccination Status

	Caucasian
Vaccinated Status Pre-Intervention	
Pearson Correlation	.266*
Sig. (2-tailed)	.045
N	57

* Correlations are significant at 0.05 level (2-tailed).

Results and PICO Question Discussion

The PICO question for this capstone project asked whether an evidence-based educational intervention that sought to improve the understanding of: a) influenza, b) its risks to the nurse, patients, and others, c) the efficacy of the vaccine, and d) the risks of side effects, would improve vaccination rates among RNs. The data show that although there were changes in vaccination status following the intervention, these changes were not statistically significant. There were seven nurses who changed vaccination status and became vaccinated following the intervention, however there were six nurses who were reported to have been vaccinated before the intervention that were reported as not being vaccinated following the intervention, resulting in a net change (increase) of one nurse. This change from having previously been vaccinated in 2012-13 to not being vaccinated in 2013-14 was unexpected, especially when considering the strong correlation of prior vaccination status to subsequent vaccination status seen in this study.

Similar association with previous vaccination behaviors predicting future vaccination behaviors has also been reported in the literature (Coe, Gatewood, Moczygemba, Goode, & Beckner, 2010; Henriksen Hellyer et al., 2011; Kraut, Graff, & McLean, 2011; Pierrynowski Gallant, Murray, & McNeil, 2006; Teitler-Regev, Shahrabani, & Benzion, 2011). Because the facility does not require a written declination statement or proof of vaccination from another site, these results remain curious.

The HBM concepts of perceived severity and susceptibility have been thought to have a strong impact on the likelihood of someone taking a preventative health action, and the literature suggests that often nurses do not apply the same level of concern regarding susceptibility and severity of influenza to themselves as they do to patients, when considering vaccination for influenza (Marshall, Tetu-Mouradjian, & Fulton, 2010; Teitler-Regev, Shahrabani, & Benzion, 2011). When susceptibility and severity are not believed to be high by an individual, then the barriers or the perceptions of risks, such as risk of vaccine side effects, take on a stronger role in motivating one to take a preventative health behavior such as vaccination for seasonal influenza (Champion & Skinner, 2008; Marshall, Tetu-Mouradjian, & Fulton, 2010; Teitler-Regev, Shahrabani, & Benzion, 2011). It is worth considering that in this capstone project, the perceived risk of susceptibility to influenza and the perceived consequences from personally contracting influenza were not increased substantially, and/or the perceived risks from the vaccine may not have been decreased with enough magnitude to shift the driving and restraining forces to motivate a nurse to change behaviors and become vaccinated. Likewise, the intensity of the cues to act may have been lower than required to cause a change in behavior. Role modeling from trusted sources, recommendations from peers, organizational leaders, and physicians for vaccination, have been reported in the literature as effective methods of creating needed

motivation or cues to act for vaccination (Kraut, Graff, & McLean, 2011; Prematunge et al., 2012). Social and environmental cues to act have also been found to be an effective trigger for people to become vaccinated. For example, when unvaccinated individuals see the majority of their peers being vaccinated, they tend to accept vaccination more readily (D'Souza, Zyngier, Robinson, Schlotterlein, & Sullivan-Mort, 2011). Considering the low overall vaccination rates for all employees at the facility, it is possible that the organizational culture does not create strong cues to act towards influenza vaccination. Marshall, Tetu-Mouradjian, and Fulton (2010) suggested that there are differences among individuals when determining what will create a cue to act for vaccination. These authors described three groups of nurses that they identified by their likelihood to change and accept influenza vaccination, when they previously were resistant to vaccination. Of the three groups, only one group was thought to be likely to change from educational tactics, and their willingness to become vaccinated would only change if they perceived that the risk of influenza for their self, or for a loved one, had increased. The second group would only consider vaccination if it were a mandatory condition of employment, and the third group would not consider vaccination for any reason and would find employment elsewhere or leave nursing, if vaccination became a mandatory condition of employment (Marshall et al, 2010).

The sample size limited the ability to evaluate every demographic characteristic that might have shown an association with vaccination status. There were, however, some demographic characteristics in the total sample that were found to have an association with vaccination status. Age was found to have both positive and negative correlations with vaccination behaviors. First, age was found to have a moderate positive association with being vaccinated before the intervention. Age also had a small negative association with never being

vaccinated. Simply put, older nurses were more likely to be vaccinated, whereas younger nurses were less likely to be vaccinated. This finding is consistent with the results from other studies regarding age and vaccination status (Bouadma et al., 2012; Kraut, Graff, & McLean, 2011; Milner, Eichold, Franks, & Johnson, 2010). One reason for the difference in vaccination status seen among older RNs is that they may perceive their risks to be higher as they enter into the traditionally recommended high-risk age group for influenza immunization. In contrast, younger RNs may not have had personal or clinical experiences with influenza and its associated complications and mortality, and so, may be less concerned about their susceptibility and risks from the illness, and may be more likely to have greater concerns about side effects from the vaccine. Being of Asian race/ethnicity had a moderate association with not being vaccinated before the intervention, but were more likely to change status and accept vaccination following the intervention.

The characteristic with the strongest association to being vaccinated following the intervention was being vaccinated in the previous influenza season. While there may be some generational, and cultural differences in influenza vaccination behaviors, past behavior seems to be the most predictive of current vaccination status. If one was vaccinated in the past, these results suggest that one will likely continue to be vaccinated again in the subsequent influenza seasons. These nurses would not have had a change in perceived risks or severity of influenza as their behavior already adhered to recommendations for vaccinations.

The finding that the educational intervention did not change nurse's vaccination status or increase vaccination rates, while disappointing, is consistent with findings reported in many other studies (Coe, Gatewood, Moczygemba, Goode, & Beckner, 2010; Henriksen Hellyer et al., 2011; Kraut, Graff, & McLean, 2011; Pierrynowski Gallant, Murray, & McNeil, 2006; Teitler-

Regev, Shahrabani, & Benzion, 2011). The results from this capstone project suggest that changing behaviors related to vaccination for influenza is complex and that a single tactic may not solve the problem of low influenza vaccination rates among RNs.

Limitations, Recommendations and Implications for Change

Limitations

Despite measures taken to reduce such threats to the project, there were several important limitations for which this project's findings must be considered. The utilization of a convenience sample limits the generalizability of the results. Self-selection bias may have been present in those that chose to attend the presentation on influenza and indeed, vaccination rates of the RNs in the sample were higher vaccinated than those for the total facility RN population. This may suggest that the RNs attending the presentation were already biased toward vaccination. Similarly, even though the responses from the participants were anonymous, the perceived desirability of answering the question of previous vaccination status in the affirmative, cannot be ruled out as a possible bias, and could offer an alternative explanation for the change from vaccinated to not vaccinated following the intervention, rather than an error in reporting or documentation. The sample size was smaller than desired and did not achieve needed power to avoid a Type II error for all intended data to be analyzed. The demographic make-up of the sample was not representative of the population of RNs in Texas in age, educational level, or racial/ethnic composition. The mean age of the sample was 51 as compared to the Texas average RN age of 46 years. Race/Ethnic make up of the sample differed from both the facility RN population and that of Texas. Asian RNs attended the presentations in higher proportions (33% vs. 11%) than are employed at the facility, and fewer Caucasian (21% vs. 40%) and African American (31% vs. 42%) nurses attended than were employed at the facility. More RNs in the

sample held Bachelor's degrees (47.4% vs. 38.8%) and Master's degrees (29.8% vs. 8.7%) than in the Texas RN population. A total of 24 RN participants failed to return their participant data sheets following the presentation, further reducing the sample size.

There were six RNs that participated and returned data collection sheets, for which vaccination status was unknown for the influenza season following the intervention, and were excluded from the data analysis. Similarly, there were some differences noted between vaccination status reported by the individual participants via their data collection sheets and the vaccination status reported by facility for the same individual, for the influenza season prior to the intervention. When such a discrepancy between self-reported vaccination status and facility reported status existed, the facility documentation was used to maintain consistency, as this was the only method for documentation of vaccination status for the 2013-14 influenza season. Because the facility does not require documentation from employees if they were vaccinated elsewhere, it is possible that the facility reports were in fact, incorrect. Despite these limitations, the findings suggest that some differences may exist in nurses' vaccination behaviors based on RN characteristics such as ethnicity and age.

Recommendations and Implications for Change

The results from the data analysis suggest that an educational presentation, as a single intervention, may not be the most effective method for impacting changes in behavior related to vaccination. These findings are consistent with other studies that found while education may be helpful in improving knowledge and reducing misconceptions and myths surrounding influenza and influenza vaccines, significant behavioral changes are difficult to achieve from its use (Marshall, Tetu-Mouradjian, & Fulton, 2010). Marshall et al (2010) suggested that only select individuals would consider voluntarily becoming vaccinated following education, and only when

the risk from contracting influenza was increased. Multiple interventions that supplement education, such as using peer champions, employer and/or physician recommendations, the use of social media to inform healthcare workers, improving the ease of compliance by offering vaccination free of charge and at convenient times and locations, and offering choices of vaccine methods for those who might have a fear of needles, are needed to improve vaccination acceptance (Guide to Community Preventive Services, 2008; Music, 2011; Talbot et al., 2005). The implications for change include the understanding that changing health behaviors is seldom simple, and is unlikely to be successful based on one intervention alone. It is important for those who are working to improve vaccination rates to understand what interventions and in what combination have the highest chance for success.

The associations seen on the effect of race/ethnicity and age on vaccination behaviors are also worthy of further exploration. Perhaps a different approach is needed to address the specific concerns of those nurses who are younger and perhaps less likely to have experienced influenza's serious negative outcomes, either personally or in their work. The recognition that there are most certainly cultural differences in health/vaccination related behaviors has important implications for nursing practice. Research, to better understand these differences, is needed in order to develop the most effective intervention(s).

The fact that nurses were reported as not vaccinated following the intervention when they had been vaccinated in the prior season is puzzling. This finding raises the question of whether vaccination status was accurately reported by their employer for the current year influenza vaccination. It seems counter-intuitive that they were dissuaded from vaccination by the presentation, when they had been vaccinated in the past, considering the strong relationship seen between pre and post intervention vaccination status. It is conceivable that they may have

been vaccinated at a personal physician's office, a pharmacy, or another venue, or they were biased toward answering in the affirmative (desirability bias) and were not truthful. Since the facility did not require a written declination for vaccine refusal, or some positive documentation that they had been vaccinated at another site, it is impossible to know. Requiring employees to provide this type of documentation each year, would allow for a clearer picture of actual vaccination status and provide information for more targeted interventions. Moreover, implementation of signed vaccination declination documents have been shown to be helpful in raising vaccination rates modestly when used as part of a comprehensive voluntary vaccination program (Talbot et al., 2010).

It was the hope of this investigator that vaccination rates could be improved by providing facts and dispelling misinformation, but that was not the result. Previous studies have reported similar disappointing results, which may explain the increase in the number of professional organizations, healthcare systems, and state governments that have called for the development of policies mandating vaccination as a condition of employment (American College of Physicians, 2010; Caplan, 2012; Colorado Department of Public Health and Environment, 2013; Colorado Hospital Association, 2012; Committee on Practice and Ambulatory Medicine and Council on Community Pediatrics, 2010; Converso, O'Neal, & Olsen, 2010; Domrose, 2013; Music, 2012; Talbot et al., 2010; Talbot & Schaffner, 2010). Vaccination rates in facilities where mandatory vaccination policies have been implemented have met and often exceeded the 90% target for healthcare workers from the Healthy People 2020 recommendations (Immunization Action Coalition, 2014; Lowes, 2012; Talbot et al., 2010). It may be that this will be the only effective method for achieving the target of 90% for healthcare workers.

Replication of this study, with a larger sample size, while introducing additional layers of understanding regarding RN vaccination behavior, is recommended. For example, asking a question of the participant about where they were vaccinated, if they reported that they had been vaccinated, could help to resolve discrepancies between facility records and participant responses. Likewise, it would be helpful to survey subjects for rationales for vaccination behavior in order to understand possible differences in racial/ethnic characteristics.

Employing alternate methods for education, such as on-line learning, or the use of influenza (peer group) champions to provide information, could help to remove barriers to attending in-person presentations, and provide information in a culturally, and perhaps a more age-targeted, manner. These methods could have the added benefit of increasing the sample size, which would result in a more representative sample. The use of a pre-test/post-test to assess knowledge and beliefs prior to and following an intervention regarding influenza and the influenza vaccine, may also be beneficial in evaluating whether the presentation accomplished its goal of improving knowledge and dispelling misinformation and myths.

For the facility, recommendations for change include the implementation of signed declination statement for those employees who decline vaccination, and positive documentation for vaccination at sites other than the facility for more accurate vaccination data. The implementation of peer and leadership vaccination champions within each department may help encourage others to become vaccinated. Providing vaccine mobile carts throughout the facility on all shifts, to decrease barriers such as inconvenience of access to the vaccination is also recommended.

Conclusion

For three decades, the vaccination of health care workers has been recommended to reduce the transmission of, and subsequent morbidity and mortality from influenza, and each year voluntary campaigns for healthcare worker vaccination continue to deliver disappointing results (Ottenberg et al., 2011). Nurses are among the most trusted professions and comprise the largest portion of the healthcare workforce (American Association of Colleges of Nursing, 2013; Swift, 2013. Yet when it comes to being vaccinated for influenza, rates for RNs remain below the Healthy People 2020 target for healthcare professions (U.S. Department of Health and Human Services, 2013). Nurses who refuse getting vaccinated for influenza often have less accurate knowledge about influenza, its risks, and influenza vaccine safety and effectiveness than nurses who are vaccinated (Baron-Epel, Bord, Habib, & Rishpon, 2012, Clark, Cowan, & Wortley, 2009; and Friedl, Aegerter, Saner, Meir, & Beer, 2012; Zhang, While & Norman, 2010). As healthcare professionals who have been entrusted by the public to provide safe and effective care, nurses must protect their patients from preventable illness such as influenza. This project suggested that seasonal influenza vaccination rates were not improved in RNs following education aimed at improving knowledge about influenza, and dispelling the misconceptions and myths about influenza vaccines. In the face of the overwhelming scientific evidence and ethical justifications that exist to support vaccination of all healthcare workers, (National Foundation for Infectious Diseases, 2008; Ottenberg et al., 2011; Poland, Ofstead, Tucker, & Beebe, 2008; Poland, Tosh, & Jacobson, 2005; Sullivan, 2009; Talbot & Talbot, 2013) it may be that mandatory vaccination policies will be the only tactic able to achieve a healthcare workforce vaccination rate of 90%. Nurses will continue to require accurate information and improved knowledge of influenza and influenza vaccines, in order to improve vaccination rates within their

community and population, regardless of future mandatory healthcare worker vaccination policies. For the time being, in the absence of such mandates, further studies to help determine what evidence-based interventions are successful in improving RN influenza vaccination rates are needed.

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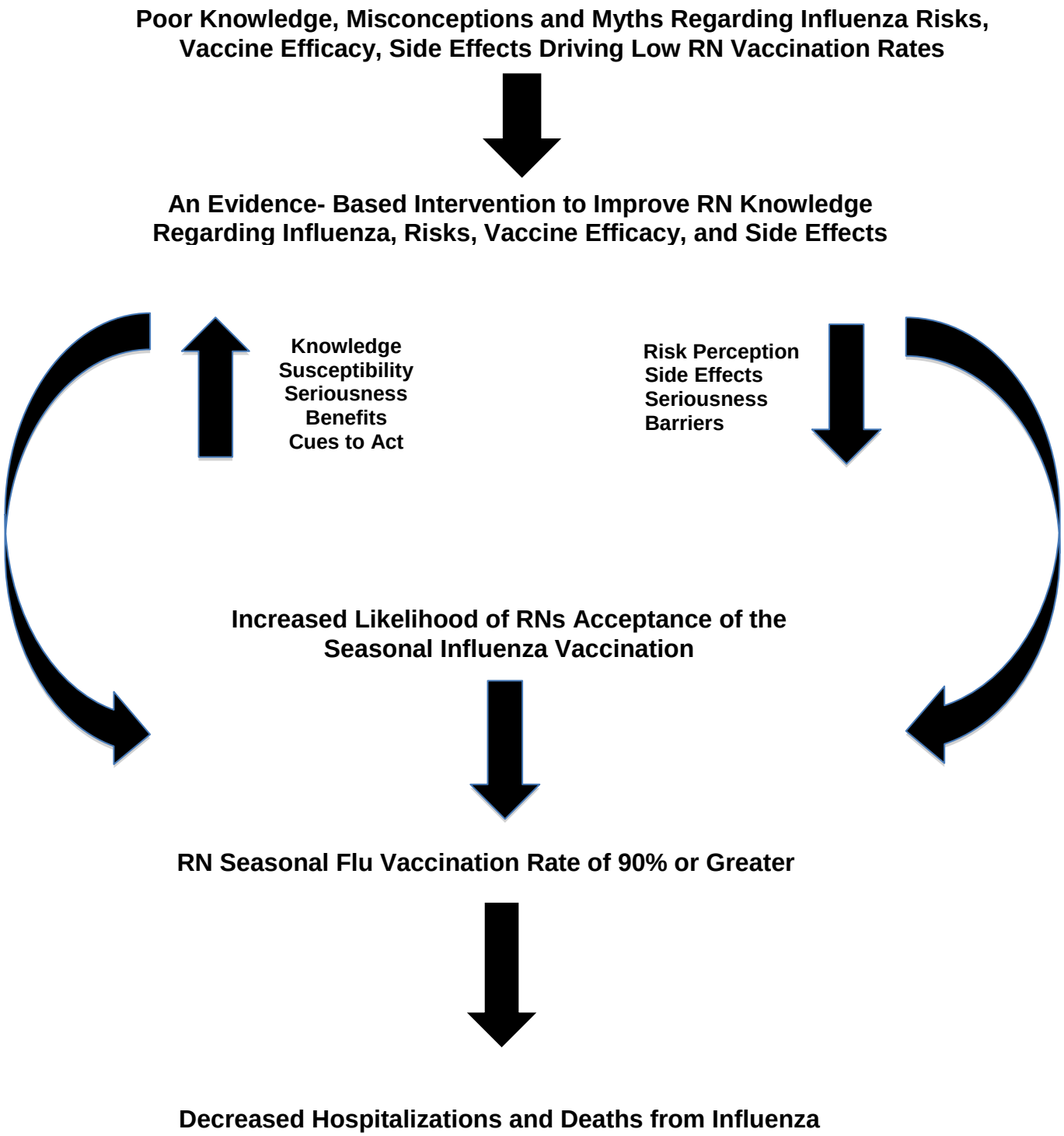
Appendix A

Health Belief Model



Appendix B

Budget

Project Resource	**Resource Cost**	**Total Cost**
Paper	$ 30.00/case	$ 60.00
Printer Toner	$50.00/each	$ 250.00
Gas/Mileage	$0.50 per mile	$ 480.00
SPSS Software	60.00/six month rental	$ 60.00
Investigator (Twelve-one hour presentations)	65.00/hour	$ 780.00
Participants (One hour presentation)	40.00/hour	$ 2,280.00
Total Budget		$ 3,130.00

Appendix D

Capstone Project Timeline

Step	**Activity**	**Date**
1. Problem Identification	Identify need, PICO statement	May 2013
	Literature Review	August 2013
2. Needs Assessment	Identify population	May 2013
	Identify sponsor/site	May – June 2013
	Organizational assessment	June – July 2013
	Assess available resources	July 2013
	Desired outcomes	July 2013
	Team selection	September 2013
	Define scope of project	August 2013
	Cost/benefit analysis	November-December 2013
3. Goals, Objectives, Mission Statement	Goals	October-November 2013
	Process outcomes/objectives	October – November 2013
	Mission statement	October – November 2013
4. Theoretical Underpinnings	Theories of Change	September 2013. Lewin
	Theories to support project framework	September 2013. Health Belief Model.
5. Work Planning	Project proposal	September-October 2013
	Project management tools: milestones, timeline, budget	September 2013
6. Planning for Evaluation	Develop evaluation plan	September -December 2013
	Logic model development	September 2013
7. Implementation	IRB approval	August-September 2013
	Threats and barriers	August-September 2013
	Monitoring implementation phase	October – December 2013
	Project closure	January-March 2014
8. Giving Meaning to the Data	Qualitative data/Quantitative data analysis	March - July 2014
9. Utilizing and Reporting Results	Written dissemination	August 2014
	Oral dissemination	August 2014

Appendix D

Logic Model

RESOURCES	**ACTIVITIES**	**OUTPUTS**	**SHORT AND LONG-TERM OUTCOMES**	**IMPACT**
In order to accomplish our set of activities we will need the following: 1. Evidence based information on Influenza, risks, vaccine efficacy and side effects. 2. Data on facility's current RN vaccination rate and need/desire for improvement in rate. 3. Projected cost of providing flu vaccine to RN staff and access to vaccine. 4. Projected cost of providing educational presentation to staff nurses. 5. Development of presentations using media (PowerPoint). 6. Obtain Continuing Education credits for presentation. 7. Multi-media presentation equipment. 8. Executive Leadership support. 9. Development of survey/ Data Collection Tool.	In order to address our problem we will accomplish the following activities: 1. Present information to RN's at facility on: Influenza Risk Vaccine efficacy Side effects. 2. Provide CE's for participation/attend presentation. 3. Assess vaccination rates following intervention.	Once accomplished these activities will produce the following: 1. Improved knowledge of the following: Influenza Risk of Flu Vaccine Efficacy Vaccine Side Effects.	If accomplished these activities will lead to the following changes in 1-3 and then 4-6 years: 1. Improved rates of RN's receiving seasonal influenza vaccination over baseline in 1st year. 2. Decreased absenteeism during influenza season. 3. Rates of RN vaccination for seasonal influenza at or above 90% Healthy People 2020 target within 4 yrs.	If accomplished these activities will lead to the following changes in 7-10 years: 1.Decreased transmission of Influenza. 2. Decreased hospitalizations for Influenza. 3. Decreased deaths from Influenza.

Appendix E

August 5, 2013

Debra Maitre, MS, RNC-OB, C-EFM, NEA-BC
3908 Boulton Court
Plano, Texas 75025

RE: "An Evidence Based Intervention to Improve Vaccination Rates for Seasonal Influenza Among Registered Nurses"

Dear Ms. Maitre:

This is to inform you that the Veteran's Affairs Medical Center Dallas Institutional Review Board or its proxy committee has reviewed the above mentioned project and has determined this activity is not seeking to obtain generalizable knowledge. Therefore, it is not human subjects research and IRB review and approval is not required.

Please call me if you have any questions about the terms of this determination.

Jim Lomo Jr. ACOS/AO VA North Texas Healthcare System
Name, Title 08/05/13

Appendix F

REGIS UNIVERSITY

Academic Affairs
Academic Grants

3333 Regis Boulevard, H-4
Denver, Colorado 80221-1099

303-458-4206
303-964-3647 FAX
www.regis.edu

IRB – REGIS UNIVERSITY

September 30, 2013

Debra Maitre
3908 Boulton Court
Plano, TX 75025

RE: IRB #: 13-245

Dear Ms. Maitre:

Your application to the Regis IRB for your project, "An Evidence Based Intervention to Improve Vaccination Rates for Seasonal Influenza among Registered Nurses," was approved as an exempt study on September 27, 2013. This study was approved per exempt study category 45CFR46.101.b(#2).

The designation of "exempt" means no further IRB review of this project, as it is currently designed, is needed.

If changes are made in the research plan that significantly alter the involvement of human subjects from that which was approved in the named application, the new research plan must be resubmitted to the Regis IRB for approval.

Sincerely,

Patsy McGuire Cullen

Patsy McGuire Cullen, PhD, PNP-BC
Chair, Institutional Review Board
Professor & Director
Doctor of Nursing Practice & Nurse Practitioner Programs
Loretto Heights School of Nursing
Regis University

cc: Dr. Cheryl Kruschke

Appendix G

CITI Collaborative Institutional Training Initiative

Human Research Curriculum Completion Report
Printed on 11/11/2012

Learner: Debra Maitre (username: debramaitre)
Institution: Regis University
Contact Information Department: Nursing
Email: debmaitre@yahoo.com
Social Behavioral Research Investigators and Key Personnel:

Stage 1. Basic Course Passed on 11/11/12 (Ref # 9142210)

Required Modules	Date Completed	
Introduction	11/08/12	no quiz
History and Ethical Principles - SBR	11/08/12	no quiz
The Regulations and The Social and Behavioral Sciences - SBR	11/11/12	5/5 (100%)
Assessing Risk in Social and Behavioral Sciences - SBR	11/11/12	4/5 (80%)
Informed Consent - SBR	11/11/12	5/5 (100%)
Privacy and Confidentiality - SBR	11/11/12	3/5 (60%)
Regis University	11/11/12	no quiz

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI participating institution. Falsified information and unauthorized use of the CITI course site is unethical, and may be considered scientific misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Course Coordinator

Return

Appendix H-1

PARTICIPANT INFORMATION SHEET

An Evidence Based Intervention to Improve Vaccination Rates for Seasonal Influenza among Registered Nurses

INVITATION

My name is Debra Maitre and I am a registered nurse in a doctoral program at Regis University. I am conducting a study on how an educational presentation on seasonal influenza affects the rate of vaccination for the flu among registered nurses. I have received approval from the VA Medical Center and from Regis University for this project and I would like to invite you to participate.
In this study, you will be asked to complete the demographic data form (attached) and listen to a presentation on seasonal influenza, its risks and the seasonal influenza vaccine. The presentation typically takes 45 minutes or less.

PARTICIPANTS' RIGHTS

You may decide to stop being a part of the study at any time without explanation. You have the right to ask that any data you have supplied to that point be withdrawn/destroyed. You have the right to omit or refuse to answer or respond to any question that is asked of you as appropriate and without penalty. You have the right to have your questions about the procedures answered. If you have any questions as a result of reading this information sheet, you should ask the investigator before the study begins.

BENEFITS AND RISKS

There are no known risks for you from participation in this study. The benefits gained may be an increased understanding of influenza and the seasonal influenza vaccine; however, all may not consider this a benefit.

COST, REIMBURSEMENT AND COMPENSATION

Your participation in this study is voluntary and there is no compensation for your participation.

CONFIDENTIALITY/ANONYMITY

The data collected will not contain any personally identifiable information and will be reported in aggregate/group fashion. All Demographic Data sheets will be kept in a locked and secured location and only the investigator and facility representative will have access to the information. Any published results of this study will be presented as group data and any identifying information will not be used.

CONFLICT OF INTEREST

The investigator has received no funding for this study and has no conflicts of interest to disclose.

FOR FURTHER INFORMATION

Debra Maitre will be glad to answer your questions about this study at any time. You may contact her at 214-282-7420 or at dmaitre@regis.edu.

Appendix H-2

DEMOGRAPHIC DATA

By completing this form, I give consent to participate in the study "An evidence based intervention to improve vaccination rates for seasonal influenza among registered nurses".

Subject Code:

Date: _____

I am a (Circle one):

1. Registered Nurse 2. LVN 3. CNA /PCT Other:_____

Only Registered Nurses need to complete the remainder of the form. If you are not a registered nurse you may stop here. Thank you.

Age (in years) _____

Gender: 1. Male 2. Female

Ethnic/Racial Identity: (Circle one)

1. Asian 2. Native American 3. Black 4. Hispanic/Latin 5. Caucasian

6. Other_____

Education: (Circle highest level completed)

1. High School 1 2 3 4

2. College

1. Associates Degree

2. Bachelors Degree

3. Masters Degree

4. Doctorate

5. Other _____

Year's experience:_____

I was employed at FACILITY Dallas last year during flu season (October 2012 through March 2013): (Circle one)

1. Yes 2. No

I received the Flu Vaccine last year: (Circle one) 1. Yes 2. No

Appendix I

Presentation

Objectives

- By the end of this presentation, participants should be able to
  - Understand the risks of having influenza for themselves, their families and their patients
  - Describe the myths and misconceptions about the side effects of influenza vaccine and the effectiveness of the vaccine
  - State at least one reason why they should have an annual influenza vaccination

Influenza (Flu)

- Influenza is an infection that is caused by a virus
- There are many different influenza viruses
- Influenza comes on suddenly, and makes you sick for a week or longer and can send you to the hospital – it affects your lungs, throat, nose and other parts of your body

Colds vs. Influenza

Symptoms	Cold	Influenza
Fever	Rare in adults and older children but can be as high as 102 degrees Fahrenheit in infants and young children	Usually 102 degrees Fahrenheit but can go up to 104 degrees and usually lasts 3 to 4 days
Headache	Rare	Sudden onset and can be severe
Muscle aches	Mild	Usual, often severe
Tiredness and weakness	Mild	Can last 2 or more weeks
Extreme exhaustion	Never	Sudden onset and can be severe
Runny nose	Often	Sometimes
Sneezing	Often	Sometimes
Sore throat	Often	Sometimes
Cough	Mild, hacking cough	Usual and can be severe

www.cdc.gov/flu/about/QA/coldflu.htm

Transmission

- Influenza spreads through droplets – released into the air after a sneeze, cough or talking
- You may get sick if the droplets land on your nose, eyes or mouth
- You can also get influenza from touching a surface where the virus lands, and then touching your mouth or nose

CDC Epidemiology and Prevention of Vaccine Preventable Diseases, 2012

Influenza is risky business

- Influenza is the 8th leading cause of death in the U.S.

CDC/National Center for Health Statistics Deaths and Mortality, 2009

  - Influenza kills as many people in the U.S. as Breast Cancer

  - Approximately 36,000 people will die in the U.S. this year because of influenza

Poland et al (2005). Vaccine, 23:2251-2255.

High risk populations

- People with chronic diseases like asthma, diabetes, cardiovascular diseases and obesity
- People who are 6mo – 18 yrs. and > 49 yrs
- Pregnant women

How You should help

- **Don't** work when you feel sick
- Wash your hands, sneeze into your sleeve or use a tissue
- **But this is not enough!!**
  - Almost 50 % of infected people don't have symptoms when they are infected
  - People can spread Influenza **before** they feel sick

APIC Member Initiative (2004) Protect your patients. Protect yourself

How You should help

- **But this is not enough!!**
  - Almost **50 %** of infected people don't have symptoms when they are infected
  - People can spread Influenza **before** they feel sick

What You should do

- **Get Vaccinated !**
  - Studies show that if health care workers get vaccinated – influenza related deaths can be decreased in hospitals by 40 % !

Poland et al (2005) 23: 2251-2255

Why should You get vaccinated?

- Vaccines are most effective in younger, healthier individuals –
  - Influenza vaccine is 70-90% effective in healthy people less than 65 yrs.
  - Patients are high risk for influenza– **especially** the elderly and immuno-compromised and they are **least** likely to develop an adequate response to vaccine
  - Vaccine is only 30-40% effective among frail elderly

CDC Epidemiology and Prevention of Vaccine-Preventable Diseases (2012).

Myths and Misconceptions

- MYTH: "I don't need the vaccine because I am not high risk – I am healthy"
- FACT:
  - Vaccinations are intended to KEEP people healthy
  - Influenza vaccine protects the body before you get sick
  - If you get influenza – it may be mild – but for those at high risk that you could infect – it may be fatal!
  - You can infect someone 24 hrs before you know you are sick

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Myths and Misconceptions

- MYTH: "The influenza vaccine gave me the flu"
- FACT: The influenza vaccine **can not** give you the flu – it is impossible
  - There are 2 types of influenza vaccines -
    - Those that contain only pieces of killed influenza viruses
    - Nasal spray which contain inactivated viruses – which means it has been changed so that it **can not** cause influenza

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Myths and Misconceptions

- MYTH: "I got sick right after getting an influenza vaccination"
- FACT:
  - It takes 2 weeks for the influenza vaccine to provide full protection
  - You may have been already infected before getting the vaccine or shortly after being vaccinated
  - You may have been infected with something else that is not influenza

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Myths and Misconceptions

- MYTH: "The influenza vaccine is unsafe – you can get Guillain-Barre (G-B) from the shot"
- FACT: The influenza shot and nasal spray are ***very*** safe –
  - Side effects are mild and last only 1- 2 days –
    - Redness, soreness at site of injection or runny nose from nasal spray
    - Occasionally – headache, low grade fever and body aches
    - Risk of serious side effects EXTREMELY rare - **less than 1% -**
    - G-B has not been linked to influenza vaccine since 1970s

CDC (2010) Prevention and control of influenza with vaccines.

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What's in it for me?

- You won't need to take time off from work because of influenza–
  - Healthcare workers who are vaccinated take 50% less sick days

APIC Member Initiative (2004) Protect your patients. Protect yourself.

- You won't need to pay for a doctor visit and medications to treat influenza–
  - Vaccinated healthcare workers have about 44% less doctor visits

Poland et al (2005). Vaccine 23, 2251-2255.

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What's in it for me?

- You won't need to cancel activities with friends and family because you have influenza–
  - Healthcare workers who are vaccinated have 59% less illness during vacation time.

Influenza vaccination of health-care personnel recommendations of ACIP and HICPAC- MMWR (2006).

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Why get vaccinated?

- Protect **Yourself** from influenza

- Protect your **Patients**

- Protect your **Family** and **Friends**

Why get vaccinated?

- **And -**
  - It's Free
  - It's Safe
  - It's Quick and Easy
  - It can save you Time and Money

Why get vaccinated ?

- **It's the right thing to do!**