2019

Targeted Education for the Prevention of Vaccine Refusal

Catina LaShawn Davis
Walden University

Walden University

College of Health Sciences

This is to certify that the doctoral study by

Catina Davis

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

Review Committee
Dr. Barbara Niedz, Committee Chairperson, Nursing Faculty
Dr. Melanie Braswell, Committee Member, Nursing Faculty
Dr. Diane Whitehead, University Reviewer, Nursing Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2019

Abstract

Targeted Education for the Prevention of Vaccine Refusal

by

Catina L. Davis

MS, Old Dominion University, 2012

BS, Norfolk State University, 2010

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

May 2019

Abstract

Vaccinations are important factors in the irradication of most communicable diseases. Tetanus, diphtheria, and pertussis (Tdap) vaccine has been found to decrease the incidence and further spread of pertussis, and even nullify its existence, yet many postpartum mothers opt not to receive the vaccination even if eligible to do so. It was unknown whether clinical nursing staff at the project site had sufficient knowledge about Tdap vaccine to educate postpartum mothers to accept the vaccine. The practice-focused question explored whether an educational program and a toolkit implemented for nursing staff members on the postpartum nursing unit would improve Tdap vaccination rates among postpartum mothers. The health belief model, theory of planned behavior, and social learning theory provided a framework for the project. Evidence obtained from the results of pre- and post-testing of nursing staff on their vaccine-related knowledge and attitudes showed a statistically significant increase in knowledge ($z = -3.366$, $p = .001$). Descriptive statistics were used to evaluate the change in Tdap refusal after the education. The use of Tdap vaccine in the postpartum period improved slightly with fewer postpartum mothers refusing the vaccine in the post-education period. Project findings showed that providing Tdap vaccine education to clinical nursing staff could prepare them to teach postpartum mothers about the benefits of Tdap vaccination, which may improve the percentage of postpartum mothers who will accept the vaccine. Higher vaccination rates might contribute to positive social change by decreasing pertussis transmission rates for newborns.

Targeted Education for the Prevention of Vaccine Refusal

by

Catina L. Davis

MS, Old Dominion University, 2012

BS, Norfolk State University, 2010

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

May 2019

Dedication

To my husband, Darrell, and daughter, Selina, I thank you so much for your encouragement throughout the pursuit of my education. I love you both because you gave me inspiration when I needed it; you gave me hope when I thought it was hopeless to continue, and you both continuously reminded me of the importance of perseverance.

Acknowledgments

First and foremost, to God, I thank you for all that you have done for me, for keeping me, giving me ample health and strength, and for holding me in the palm of your hands. You are truly awesome and powerful. To my family, especially my father, Lonnie, and mother, Catherine Peterson, thank you so much for all the encouragement and love and for being in my corner when I needed you most. You have been my cheering squad, a chauffeur for my child, and the glue that has held me together during this journey. I love you. To my coworkers, I thank you for your encouraging words and for always telling me that I could do it. To my preceptors, Anita Jackson MSN RN and Ilse Gomes MSN RN, there are not enough words to tell you how much I appreciate you both. Your guidance during this time was instrumental to my success. For this I am grateful. To Leana Fox RN CNE, thank you for mentoring me and for being a shoulder and sounding board when I needed someone to lean on and to answer questions. You have been an angel sitting on my shoulder. I appreciate you. To my DNP project site, thank you so much for your participation. It is because of your participation that we have the ability to continue to make a difference within the lives of our mothers, newborns, and their families. Without your support this would not have been possible.

Table of Contents

List of Tables

Section 1: Nature of the Project

Introduction

The Tdap vaccine is commonly used to protect against tetanus, diphtheria, and pertussis and is routinely given at ages 11-12 as well as a booster every 10 years (Centers for Disease Control and Prevention [CDC], 2013). In addition to preventing tetanus and diphtheria, the Tdap vaccine is intended to decrease the incidence of pertussis or "whooping cough" within the population of newborns through the vaccination of the mother during the postpartum period (CDC, 2018). A retrospective project during the years 2010 to 2015 estimated Tdap maternal vaccine administration as being 96.1% effective keeping a newborn during their first 2 months of life free from contracting pertussis; and during the first year of life as 69% protected (Baxter, Bartlett, Fireman, Lewis, & Klein, 2017). A guided educational program and toolkit for the clinical nursing staff working on the postpartum nursing care unit may be beneficial to assist them in educating postpartum mothers to make the decision to accept the Tdap vaccination. Beneficial use of toolkits for knowledge translation among healthcare professionals allows the nurses to disseminate knowledge; allowing them to inform the mothers about vaccines, while building their awareness so that a change within their behaviors might occur (Barac, Stein, Bruce & Barwick, 2014)

Problem Statement

The Tdap vaccine is intended to decrease the incidence of pertussis within the population of newborns as well as prevent the incidence of tetanus and diphtheria. Three DtaP (diphtheria, tetanus, acellular pertussis) vaccine doses, which is a lower strength of

the Tdap and only contains parts of the bacteria (this is what the lower-cased *a* in acellular means), is a requirement for infants at 2 to 6 months of age, with boosters given between the ages of 15-18 months and 6 to 8 years of age (CDC, 2016c). The CDC advises that everyone acquire a booster every 10 years. However, there are no mandatory requirements for this booster (CDC, 2015; 2016b). The standard of prenatal care includes a booster offered between 27- and 36-weeks' gestation, or in the postpartum period (CDC, 2016a). However, according to the clinical nursing staff in the project setting, there are many instances of vaccine refusal. From an internet panel survey of women in the U.S. in 2015 who did not receive the Tdap vaccine during pregnancy, 43.7% did not receive the vaccine due to lack of knowledge/awareness; 23.9% due to safety concerns/risks of side effects; 14.3% stated a lack of concern about pertussis; 11% doctor recommendation to wait; and 3% stated it was because of a lack of insurance (CDC, 2016a). Postpartum mothers who are not vaccinated with a booster put their newborns at risk, since research shows that newborns are at a greater risk of contracting pertussis within their own homes from adults in their immediate environment after leaving the hospital setting (De Greeff et al., 2010).

The local hospital where the project occurred has its own birthing center which can care for at least 12 laboring and 14 acute care postpartum mothers. According to my analysis of the birthing center site, the nursing staff on the postpartum unit consists of approximately 26 nurses who are in contact with new mothers eligible for the Tdap vaccine during their 12-hour shifts. All nurses employed at the birthing center are registered nurses with at least 2 and as many as 30 years' work experience. The highest

level of education for nurses who have direct patient contact is a master's degree. There are no yearly educational provisions for the nursing staff related to the administration of the Tdap vaccination provided by the facility beyond the Vaccine Information Sheets (VIS; CDC, 2015) that the CDC provides on its website as guidelines for vaccine administration which are available on the unit. When postpartum mothers refuse the Tdap booster, they may not realize that they are putting their newborns at risk. Nursing staff members at the project site do not presently teach the mothers the importance of the vaccination process and simply accept their refusal.

According to the Advisory Committee on Immunization Practices (ACIP; 2013), studies done on the persistence of antipertussis antibodies in nonpregnant adults have shown the number of antibodies is higher during the first month after vaccination then decrease after the first year. Healy, Rench, and Baker (2013) stated that the tested blood taken after the delivery from the mother and from the infant's cord blood showed that antipertussis antibodies from delivery and the cord blood were unlikely going to provide adequate protection for the infant. They suggested that maternal antibodies waned quickly if the mothers were administered the Tdap vaccine too far in advance of their delivery and thus did not provide passive immunity (Healy et al., 2013). The ACIP (2013) recommends the following:

- The best time for women to receive the Tdap vaccine is during the third trimester (30 weeks) to provide the highest level of maternal antibodies.
- If the last tetanus vaccination administered was more than 10 years ago then a booster should be given.

- Women with unknown or incomplete tetanus should receive three vaccinations containing tetanus.

Ideally, the first tetanus vaccination should be administered before the woman becomes pregnant, another at 4 weeks gestation, and the third incorporated as a Tdap vaccination either in the last trimester or after delivery, during the woman's postpartum inpatient stay (ACIP, 2013)

According to the Virginia Department of Health (2018), there were 225 confirmed cases of pertussis in the state of Virginia in 2016. There was one known case of pertussis in the city in which the project site was located for a rate of 1 per 100,000 out of a community population of 96,201 residents. Virginia Department of Health, 2018). Confirmed pertussis cases in the surrounding communities within the Tidewater Area consisted of the highest confirmed cases to be from a range of nine to the lowest of zero confirmations (Virginia Department of Health, 2018). Thus, it is important that guided nursing education related to the Tdap vaccine be instituted for nursing staff who care for postpartum mothers at the project site since it is in close proximity to the other surrounding cities that are having incidences of pertussis.

Purpose

There are multiple reasons why vaccines are not accepted. A person's religious beliefs is a commonly expressed reason (CDC, 2018). Another is the unfounded viewpoint that the vaccines may cause disabilities including mental illnesses and autism or result in a physical ailment (CDC, 2018). In addition, some mothers verbalize that they are not sure of what the vaccine is used for or are not familiar with the medication (CDC,

2018). Increased knowledge in pregnant women during the postpartum period through educational interventions by health care professionals has a strong impact on their decision to be vaccinated, researchers have found. This educational process can have a significant impact on improving vaccination rates, as well as changing attitudes about vaccination acceptance (Celikel, Ustunsoz, & Guvenc, 2014). The role of the postpartum nursing staff member in educating new mothers about the Tdap vaccine thus has a direct impact on whether the Tdap vaccine will be accepted during the postpartum period and supported the necessity of this project. Therefore, the purpose of this project was to develop an educational process for the postpartum nursing staff and to provide them with a toolkit supporting the administration of the Tdap vaccine during the postpartum inpatient stay for eligible mothers.

At the time that the project was undertaken, there were no tools available to staff nurses that could potentially be used to facilitate an educational process with patients. The current process includes the new mother refusing the vaccine and the staff members simply accepting the refusal while providing minimal literature or professional knowledge in support of the vaccine. This process represents a significant gap in the nursing practice at the site. Staff nurses working on the postpartum unit lack resources that could be used to bring insight to new mothers about the importance of the vaccine. The prospective of the project leader suggests that nurses fail to comprehend the immunologic actions of the vaccines and how they are designed to deter the disease process. Improved familiarity with new developments in immunology through education can assist nurses to be better equipped in assisting the decision-making processes of

postpartum mothers (Strohfus et al., 2017). To address the problem of maternal Tdap vaccination refusal, I sought to answer the following question: Will an educational program and a toolkit implemented for nursing staff members on the postpartum nursing unit result in improved Tdap vaccination rates among new postpartum mothers?

Nature of the Doctoral Project

Various quality improvement interventions, committee recommendations, studies, and surveys support the need for Tdap vaccination interventions and vaccine administration during the postpartum period (Bernstein, Monty, Yang, & Cohen, 2017; CDC, 2018). The use of evidenced-based guidelines such as the ones published by the CDC and the ACIP can assist practices to improve the barriers on the social, economic, and patient level that impede vaccination acceptance (Gannon, Qaseem, Snooks & Snow, 2012). I used this literature to guide the development of the clinical nurse educational toolkit that formed the foundation of the training program for the project.

I specifically targeted the education to the clinical nursing staff for the benefit of the postpartum population. Focused education directed towards the nursing staff regarding Tdap administration may help to resolve the problem of high vaccine refusal rates and address the gap in nursing practice by providing informational tools in the form of pamphlets or handouts to the clinical nursing staff in anticipation of the counterarguments to refusal. Because there is a lack of vaccine resources available on Tdap administration for nursing staff to use to convey proper education information to their mothers during the postpartum period, researchers need to utilize the knowledge gleaned from existing evidence-based studies in creative ways (Proffeto-McGrath, 2005).

The educational program developed for this project was an effort to creatively address the practice problem.

The approach that was used in this project included the following components: (a) an educational session for all nursing staff members on the postpartum unit, (b) a pre and posttest to assess nurses' knowledge and attitudes towards vaccines that was administered before and after the education, (c) the development of a toolkit with brochures that were publicly available to help educate the new mothers on the postpartum unit, and (d) qualitative debriefing after every educational session to capture staff nurse acceptance or rejection of the educational program and behavioral intention regarding vaccine education with new mothers. This project included an educational approach and the development of materials for staff nurses to use. I did not assess the actual impact on vaccination as I considered it to be outside of the scope of this DNP project.

Significance

The stakeholder most important to this project was the clinical nursing staff, who are in a prime position to teach their postpartum mothers about the need for the Tdap vaccine and to help them to understand the value of protecting their newborn babies from pertussis. Developing an educational program for the nursing staff members and providing them with a toolkit will help provide insight into vaccine refusal among the postpartum population that they serve (Strohfus et al., 2017). When the nursing staff takes an active role in the education of the mothers, they will be able to turn the vaccine administration rejections that they encounter into opportunities for positive reinforcement and adherence to treatment plans (Crawford, Roger, & Candlin, 2018). The clinical

nursing staff, while using an integrative approach to educate postpartum mothers, could directly influence them to accept the Tdap vaccine, as well as emphasize healthy behaviors regarding their infant.

This project may add to the limited knowledge that the participating clinical nursing staff members have concerning the Tdap vaccine. Any increase in knowledge that the clinical staff obtains from utilizing the toolkit daily in practice and from the educational presentation implicit in the project could potentially result in the positive outcome of postpartum mothers being able to make an educated decision on whether to become vaccinated with the Tdap vaccine. This project is transferable to any healthcare setting where nurses are giving vaccinations to clients. Nurses working in the outpatient antenatal clinic might also benefit from this educational program and toolkit. In designing the project, I anticipated that the information provided in it would give the participating nursing staff valuable insight and tools to use in convincing and persuading new mothers that the vaccination is more beneficial than dangerous (Song, 2014).

An implication for positive social change is that the provision of focused nursing education through this project may positively contribute to infant health. As more mothers gain access to the Tdap vaccine, the higher the immunization rates reducing the incidence of pertussis and the potential for an outbreak of the disease (Bernstein, Monty, Yang & Cohen, 2017). The education that the nursing staff received during this project was specifically targeted to the population of postpartum mothers of newborns since prior research suggests that newborns are at a greater risk of contracting pertussis within their

own homes from adults in their immediate environment after leaving the hospital setting (De Greeff et al., 2010).

Summary

In reviewing the literature, I found no evidence showing that postpartum mothers do not want to keep their infants safe from pertussis. The Tdap vaccination is one way in which these mothers can do so even before the birth of their newborns. However, without the proper education from nursing staff, many will choose to refuse the vaccine putting their newborn at risk. The project emerged from the lack of information available to postpartum nursing staff at the project site and their inability to proficiently teach postpartum mothers so that they could make an educated decision about the Tdap vaccine. This project has the potential to change how nursing staff members engage with new mothers around this important issue, which may result in improved Tdap vaccination rates among new mothers.

Section 2: Background and Context

Introduction

The Tdap vaccination decreases the incidence of pertussis within the newborn population, especially when the vaccine is administered to mothers during the postpartum period. Receiving the vaccination during this time frame is pivotal since mothers who refuse the vaccination place their newborns at an immunological disadvantage and at a greater risk to contract pertussis post hospital discharge (De Greeff et al., 2010). This risk can be greatly minimized if postpartum mothers realize the benefits of having the Tdap vaccine administered after giving birth (Dempsey et al., 2016). The focus of this project was on decreasing Tdap administration refusal during the postpartum period through the provision of targeted vaccine education for the clinical nursing staff. To address the problem of maternal Tdap vaccination refusal, I posed the following question: Will an educational program and a toolkit implemented for nursing staff members on the postpartum nursing unit ultimately result in improved Tdap vaccination rates among new postpartum mothers?

The purpose of the project was to examine how the use of specific education for the clinical nursing staff could positively influence postpartum mothers and their decision to accept vaccines. General literature is widely available that correlates education with health broadly (Eide & Showalter, 2011). Cook (2015) asserted that lack of knowledge limited a person's choices, potentially leading to poor choices in health care. Included in this section are an overview of the concepts, models, and theories used in the project; a

consideration of the relevance of the problem to nursing practice; local background and context; and discussion of the role of the DNP student.

Concepts, Models, and Theories

I used three learning models for the project. The first was the social learning theory of Bandura (1988) which postulates that the clients' behavior will change based on their expectations and incentives. The second was the theory of planned behavior of Fishbein and Ajzen (1980), which suggests that people already have preconceived behavioral intentions that will lead to predictable outcomes regardless of what knowledge that they are exposed to (see, also, Madden, Ellen, & Ajzen, 1992). Last, I used the health belief model, which focuses on attitudes and beliefs about the behavior, perceived benefits, perceived barriers, perceived susceptibility, perceived severity, self-efficacy, and cues to action (Myers, 2016).

Social Learning Theory

The determination of incentives forms the basis of social learning theory. Incentives within social learning theory consist of how much the postpartum mother values the outcome and whether the outcome is the positive approval of others, increased health, or positive/negative consequences (Rosenstock, Stretcher, & Becker, 1988). The client's behavior is determined by the interpretation of consequences by the postpartum client (Rosenstock et al., 1988). Within this theory, the postpartum mother will only accept the vaccine if she believes that her lifestyle is threatening an outcome that is considered valuable, if behavioral changes reduce threats to the outcome, and if she believes that she can maintain or adapt to the change (Rosenstock et al., 1988).

Theory of Planned Behavior

Many pregnant women receive extensive information from magazines, social media, and their healthcare providers about vaccines (Ellingson & Chamberlain, 2018). Prior knowledge of vaccinations can become a hindrance to a client, just the same as not having prior knowledge (Myers, 2016). The application of the theory of planned behavior within this project is to assist the pregnant or postpartum women in understanding the relationship between their beliefs and their behaviors so that they will be able to deduce information that will assist them in the decision of accepting or declining the Tdap vaccination (Jalal-Eddeen & Abdelrahim, 2015). The new mother's beliefs in this model are an influence on whether she accepts the vaccine.

Health Belief Model

Within the health belief model, the patients work within the constructs of their perceived seriousness of the need for the Tdap vaccine and their perceived risk or susceptibility of getting the disease which would make them exhibit behaviors to either do something to prevent getting the disease or to do the opposite. However, if the patients perceive that there are benefits to taking the vaccine, then they will adopt healthier behaviors. The individual may perceive barriers as the obstacles in the way of them adopting the new behavior. The new behavior can be modified by other variables such as culture, education level, skills, past experiences and motivation (Jones & Bartlett, N.D.). These cues to action are what moves the patients to change their behavior. Self-efficacy is evident only if patients perceives that they can do the tasks.

Tdap Vaccinations in Pregnancy

Receiving the Tdap vaccination during pregnancy is a benefit for the mother as well as the unborn fetus in that the mother is prevented from contracting maternal illnesses and can positively respond to active immunizations. The benefit for the fetus is due to the transplacental transfer of maternal antibodies past the third trimester decreasing the risk of adverse fetal development (Munoz, 2007). However, in women who have not had advice on this topic prior to delivery, discharging the mother to home without the vaccine puts the infant at risk. Because the Tdap vaccination for infants less than two months old is not an option, clinical nursing staff must inform and educate postpartum mothers that receiving the Tdap vaccination can prevent catastrophic illness and disease (Silverman, 2014).

According to the CDC (2018), in 2016 there were 17,972 reported cases of pertussis with six reported deaths of children under the age of one year. This is a decrease from the 20,762 reported cases in 2015. The incidence of pertussis is the primary reason why maternal vaccination is so important. Healy, Ng, Taylor, Rench, and Swaim, (2015) conducted a project that provided the details of the Tdap uptake in pregnant women receiving prenatal care in a tertiary referral hospital in Houston, Texas. Tdap acceptance was increased after educational interventions and improved provider education resources were made available. During this study, 3,678 women (55.9%) were vaccinated with the Tdap vaccine, 100 (1.5%) women were vaccinated antenatally, 249 (3.8%) were vaccinated postpartum increasing those women who were vaccinated to a total rate of 61% from April 2013 to November 2013. The study suggests that by increasing the

provider's awareness of the new immunization recommendations, and improving the provider's education would be the prerequisites needed for increasing the hospital's Tdap immunization rates. However, education initiatives will still need to be maintained regularly to continue to increase the vaccine uptake among pregnant women which suggests that they are not reluctant to be immunized (Healy, et al., 2015).

Barriers to Tdap Booster Use

According to Munoz (2007), barriers exist whether perceived or actual resulting in the lack of the acceptance of the Tdap vaccine postpartum. These include but are not limited to: (a) the lack of scientific controlled studies supplying data supporting the use of the Tdap vaccine during and after pregnancy, (b) lack of training for nurses about immunology, (c) the amount of clinician time needed to educate and consent mothers, and (d) the lack of confidence in vaccine safety.

In a study conducted by Cheng et al. (2010), the researchers used surveys to ascertain the reasons why postpartum women would either decline or accept the Tdap vaccine for pertussis postpartum. This study took place in the Taiwan 3,000 bed teaching hospital which delivers 5,000 babies annually. This study included participants who accepted or declined the Tdap vaccine between May 2009 and October 2009. In April 2009, the healthcare providers which included physicians, labor and delivery and postpartum nurses, nursing administrators, and pharmacists all received educational training consisting of obstetrical grand rounds, workshops, and case discussions. The mothers who participated were given educational packets with the VIS information leaflet, "What you should know about infant pertussis", and a video that had data on the

efficacy and safety of the Tdap vaccine. Lastly, during prenatal visits the mothers were educated by a trained nurse who briefed them on the vaccine. After the mothers delivered, they were given a letter of intent to vaccinate form for a response of either "yes or no" while nursing staff were available to answer any questions. Women who consented to the vaccine had it administered before discharge from the hospital. All participants were given a three-page 25 question multiple choice survey to complete that discussed their concern for vaccine safety, demographic information, their access to information, how credible the information was, and factors of influence on their decision. Chi square analysis and generalized estimation equations approach to logistic regression were used to associate between the primary outcome variable and survey responses. Four variables explained the factors influencing mothers' decision to decline the vaccine in the postpartum phase: (a) low perception of maternal risk of exposure to pertussis in the postpartum period, (b) low perception of risk for infants 0 to 6 months old to contract pertussis, (c) lack of trust about information presented, and (d) a high level of concern regarding the safety of the vaccine. Contrariwise, there were six demographic characteristics that contributed to vaccine decline, significant ($p<.01$). Women who were aboriginal, with low education levels, lower family income, with fewer prenatal visits, who bottle-fed their babies were also more likely to decline the vaccine ($p<.01$). Those women who declined the vaccine reported not receiving enough information and did not trust the information that was received about the vaccine. The study results suggested that the mothers would more than likely accept the Tdap vaccine if their clinicians discussed the postpartum vaccination program with them. Lastly, results showed that before the

women were discharged from the hospital, many different forms of educational material in every language and for all educational levels should have been presented at multiple times in order to capture the majority of mothers who would accept the Tdap vaccine (Cheng et al., 2010). Although this study presents information from a culturally different perspective as compared to this DNP study setting, the implications regarding the need for education in the postpartum period and the barriers that health professionals face are still relevant.

In another study, an education barrier related to the acceptance of the Tdap vaccine during mother's postpartum period was researched in Houston at the Ben Taub General Hospital (BTGH), which delivers 5,000 babies annually to the underserved population of mostly Hispanic and African American mothers. The study was conducted between January 7 and April 30, 2008 (Healy, Rench, Castagnini, & Baker, 2009). During this study, focused education was given to physicians, nursing staff, administrators, and interpreters via educational in-services, and obstetrical grand rounds. The VIS and bilingual leaflets were given to the mothers, and vaccination posters were visible; while nursing staff and physicians were available to answer the questions of the postpartum mothers. The Tdap vaccine was offered to 1129 of 1570 postpartum mothers; 72% (n=1129) of those mothers accepted the Tdap vaccination which resulted in a 92% vaccine uptake; 396 were excluded due to receiving tetanus toxoid, no order, or medication contraindications, and 441 women were not immunized. (Healy et al., 2009). The contributing factor of why so many postpartum mothers accepted the vaccination was because of the focused, intensive education that the nursing and physician staff

received, and how well they responded to the lecture style education. The nursing staff became powerful vaccine advocates, who incorporated the education they received into routine postpartum information making the education they received the best strategy for maternal Tdap acceptance (Healy et al., 2009). The study also further suggested, that even though there were decreased Tdap refusals through the provision of the formal education by the nursing staff, African American mothers were still distrusting of Tdap vaccine acceptance over other ethnicities. The researchers of this study at its completion revealed two poignant findings. Healy et al. (2009), suggests that increased immunization rates would have occurred if the type of education strategy used would have been started earlier during participants pregnancy to sustain the education use longer over time, and that the education should have been given to them by nurses or healthcare professionals who they considered a trusted source of information (Healy et al., 2009).

Kriss et al. (2017) conducted a randomized controlled trial to pilot two educational interventions provided by medical staff: an iBook and a messaging video, which would be used for recruited African American pregnant women based on the Elaboration Likelihood Model (ELM) framework to improve the uptake of health maintenance interventions during the perinatal period to improve maternal vaccine receipt. To utilize this framework the description of how information is received and processed is noted by the healthcare professional. There are two ways this can be done; through central processing, and through peripheral processing. Central processing means that the person is motivated to analyze information that is personally relevant and information based. Contrariwise, peripheral processing uses simple messages and

information to create less enduring behavior changes (Kriss et al., 2017). This study took place in Atlanta, Georgia's metropolitan area, and included women ages 18–50 years with an expected delivery date of January 30-June 30, 2013. Participants received monetary gifts of a gift card of $50 if they completed the trial. Women who already had received the Tdap vaccine were excluded. Each woman was assigned to either the control group or to one of the vaccination education interventions (a) the messaging video "Pregnant Pause" or (b) a messaging iBook "Vaccines for a Healthy Pregnancy." Both only took 20 minutes to view. The video had very detailed Tdap vaccine information from a physician discussing the severity of pertussis, how vaccines protect the mother and infant, and current ACIP recommendation. The iBook had Tdap information in the form of a tutorial that excluded parental testimonials of when their infant contracted pertussis. Information was given in question and answer format on the safety of the vaccine, and current ACIP recommendations. The control group only received the VIS paper that did not have any interactive formatting nor any information for pregnant women were included. They also did not receive a post intervention questionnaire as the women did who used one of the other two interventions. Sample size was determined to reduce the chance of a type 2 error, with an apriori power analysis of 80% and a minimum sample was set at 162 women (54 women in each intervention). There were 741 women who were approached to participate, 224 (30%) declined, 392 (53%) were ineligible, 125 women were eligible but only agreed to participate (85%). After the study, 95 women completed follow up after delivery (34 in the control group, 31 in the video group, and 30 in the iBook group) resulting in a sample somewhat smaller than originally

planned. Chi square and t-tests showed no significant differences between the groups on demographic characteristics, assuring that true randomization occurred. For this study they wanted an 80% power to detect a 20% increase in vaccine coverage. The needed participation needed to include 162 women with the expectation of 52 women in each control group, but the target sample was not reached by the recruitment period having limited power to detect effects. The study resulted in 18% of women in the control group who were vaccinated with the Tdap (6% while pregnant and 12% postpartum), in the iBook group 50% of the women received the Tdap in the perinatal period (7% during pregnancy, and 43% postpartum), and in the video group 29% received the Tdap (6% during pregnancy and 23% postpartum). In conclusion, it was found that the women who were in the video group were more engaged than the iBook group and could relate to and understand the educational information more; feeling that there was evidence to support it. The participants who did not receive the Tdap vaccine reasons were that they did not receive a physician recommendation, did not know about the vaccine, did not feel that they were at risk, did not know what it was for, and lastly that they just do not use vaccinations. This study concludes, that a more interactive form of education provided by clinical nursing staff would be beneficial in providing targeted education for the promotion of Tdap uptake and behavioral changes during the postpartum period to promote Tdap uptake.

Definitions of Terms

For this project, the following words that are in no specific order in italics have been defined.

Tetanus Diphtheria and Pertussis Vaccine (Tdap)- Vaccine used for protection against the diseases of tetanus (lockjaw), diphtheria (thick coating on back of throat) and pertussis (whooping cough) which are contagious and can be spread through coughing and sneezing, scratches, cuts, or wounds. (Center for Disease Control and Prevention, 2015).

Antenatal- The care and treatment of pregnant women and their unborn child. (Merriam-Webster Dictionary, accessed November 15, 2015 at http://www.merriam-webster.com/dictionary/antenatal)

Postpartum- Relating to or happening in the period following the birth of a child. (Merriam-Webster Dictionary, accessed November 15, 2015 at http://www.merriam-webster.com/dictionary/postpartum)

Maternal- Relating to a mother or a woman having a baby. (Merriam-Webster Dictionary, accessed November 15, 2015 at http://www.merriam-webster.com/dictionary/maternal)

Clinician- a person qualified in the clinical practice of medicine, psychiatry, or psychology as distinguished from one specializing in laboratory or research techniques or in theory (Merriam-Webster Dictionary, accessed November 15, 2015 at http://www.merriam-webster.com/dictionary/clinician).

Relevance to Nursing Practice

The medical profession, which consists of nurses, midwives, and obstetricians, are major contributors of current and available information that is available to provide needed education regarding Tdap to mothers after having their babies on the postpartum

unit. Variables related to this somewhat controversial subject include whether the vaccine is safe to be administered to pregnant women, legal and economic issues, ethical concerns, emotional overlays, and the role of the media. Much of the evidence for the benefits of pertussis vaccination arises from epidemiologic studies regarding the incidence of the disease and the effectiveness of the vaccine in preventing it. The very nature of epidemiologic data has contributed to the controversy, since there is virtually no epidemiologic study with incontrovertible results that allows only one interpretation (Hinman, 1984). Smith et al. (2011) suggests the key rationales listed within *Public Health Report* literature as far back as 1969, states that parental decisions related to the administration of vaccines are psychosocial in nature; and manifested by the seriousness of health concerns and risks involved, the assessment of whether the disease would be transmitted, outside influences as to whether it was feasible to have vaccinations administered.

For this project, the question of whether knowledge deficits and insufficient education of clinical nursing staff affects vaccine acceptance among postpartum mothers is raised. Strohfus et al. (2017) conducted a project implementing the *Immunization Education Program* to meet four objectives: (a) develop education and training, (b) assess knowledge levels in the subject of immunizations, (c) increase immunization rates, and (d) identify challenges that may affect immunization practice knowledge and decrease immunization rates (Strohfus et al., 2017). The study took place in Health District 4 which offer services in community and reproductive health, communicable diseases, WIC, and immunizations. There were 50 medical offices out of 98 asked to

participate in the study. Total staff participants included 179, of whom 113 finished the pre-test, education/training, and 12-month post-test. The test used for the study was the Immunization Knowledge Assessment Tool (IKAT-G) which was slightly modified adding in six extra questions including demographics. Medical staff who participated in the study included registered nurses, licensed practical nurses, doctors, medical assistants, and nurse practitioners. Participants received four peer to peer one-hour immunization education training sessions over four weeks that included topics covering evidence-based immunization strategies, protocols, vaccine schedules, injection techniques, and documentation in the form of lectures, simulations/demonstrations, handouts, and small group discussions (Strohfus et al., 2017). After the participants were educated, they were given follow-up training after six months which included immunization data rates, practice challenges, documentation in the Immunization Information System, and in storage/handling. The results of the study consisted of pre-post differences in means and the 12-month post-education test mean using the chi-square test where the p value of < 0.05 is considered statistically significant (Strohfus et al., 2017). Each score for every job title was then compared to the pre-post testing to find that the participants mean knowledge level had increased overall 7.8% which was 2.0% less than their set goal for this particular area of improvement. (Strohfus et al., 2017). The pre-test resulted with a *p* value of <0.01 and a post-test *p* value of 0.97. So, in conclusion, when education and training was given over a shorter period, increased competency was noted, and when education was given over a longer time frame it was harder to maintain competency and education needed to be given continuously (Strohfus et al., 2017).

The intention of this study was to fill the gap in practice and advance the practice of the current nursing staff members on the postpartum unit. As mentioned previously, nurses did not have the tools necessary to increase their knowledge related to vaccines and their use. The provision of education via a toolkit including information about the Tdap vaccine would assist in increasing nurse competency and current administration practices, thereby giving them the proper leverage needed to provide education to the postpartum population.

Local Background and Context

The purpose of the proposed project is to begin the process of educating the postpartum mother as soon as possible post delivery about the pertussis vaccine. All postpartum mothers who have not already received the Tdap vaccination between 27-36 weeks of pregnancy are eligible to receive the vaccine. Within the last six months, an estimated 60 eligible postpartum mothers did not receive the Tdap vaccination. The foundation of education about the vaccination sets the tone and pace for the project by purposefully supplying written literature and verbal education during the mother's postpartum period before discharge from the hospital. By educating the nursing staff on the postpartum unit, the nursery staff, as well as the labor and delivery staff, the DNP project provides the groundwork to formally educate the mother as early as possible after she has labored and after delivery. The intention is that the mother is therefore well informed about the pertussis vaccination in the likelihood that the vaccination is viewed as a positive choice and is consented by the mother to be administered by the clinical nursing staff during the postpartum period before her discharge from the hospital. The

education provided to the nursing staff members will help them to examine their own perceptions about the Tdap vaccine, and vaccines in general. By doing so, these nurses will be in a better position to refute and debunk any myths or misconceptions that new mothers raise when confronted with the decision to vaccinate or not (Unisa, 2017).

Education will be provided to the 29 registered nurses who staff the birthing center to include all labor and delivery, nursery, and postpartum nurses since they all come in contact with the mothers and have the opportunity to provide Tdap vaccination education post-delivery. These nurses will receive education within one session during their scheduled monthly staff meeting, with a follow-up session to take place a few weeks later.

It is essential that the nursing staff is cognizant of the concise definitions of locally used terms since they are responsible for educating postpartum mothers. Knowledge of locally used vaccine terminology is important since most of the acronyms related to the pertussis vaccine are similar and can cause confusion for the postpartum mother. Other definitions of local terms related to the pertussis vaccine that is relevant to understanding this doctoral project, and assists to further differentiate the types of pertussis vaccines and who can use them are:

Acellular pertussis vaccine- A vaccine composed of only those fragments of bacterial cells that are best suited to stimulate a strong immune response (American Heritage Medical Dictionary, 2007).

Whole cell pertussis vaccine- A vaccine prepared from suspensions of the inactive bacterium that cause the pertussis disease (Riley & Eckert, 2015).

DTap- A preparation of diphtheria and tetanus toxoids and acellular pertussis proteins used to immunize children against all three infections or adults at high risk of complications of infection with pertussis (Medical Dictionary, 2009).

DPT- An active immunizing agent for the routine immunization of children less than six years of age against diphtheria, tetanus and pertussis (Mosby's Medical Dictionary, 2009).

This project will initially begin with the investigation of the Tdap vaccine for postpartum women legally under the provisions set by the state of Virginia. Legal requirements would have to be verified before the proposed project can be used related to public health laws, state statutes and regulations which requires the facility to assess the client's vaccination status, the ability to offer the vaccination to the client, and administrative requirements for ensuring that the client has been given the vaccine unless they have refused them (CDC, 2017).

Role of the DNP Student

Motivation for this project was the realization that while becoming more involved in the facility's obstetrical population, there was a visible trend of postpartum clients who were, for different reasons, declining the administration of the Tdap vaccination. What was noticeable within this population of clients was the observation that they had not received much, if any, education regarding Tdap vaccine use. The implementation of this proposed project may support the suggested theory that intentional focused education during the postpartum period of pregnancy will greatly influence; if not change the

perception of the mothers about the Tdap vaccine, which would lead to more postpartum mothers consenting to its administration.

The DNP student's role will consist of the creation of a toolkit. This toolkit will include the educational material that the clinical nursing staff will need to increase their knowledge base to support them when they eventually provide Tdap vaccination education to their postpartum mothers. While being able to provide persuasive strategies that the nursing staff can use to refute vaccine refusal from the mothers, the DNP student will also provide them with resources available in an attempt to eliminate any barriers within the staff's mind to debunk vaccination myths and misconceptions. Biases may be related to the awareness that most of the clinical nursing staff at the birthing center already have prior knowledge of the project's topic, which may lead to the participants having enough time to form their own personal opinions on the subject.

There is presently a standing order for the administration of the Tdap vaccine in the postpartum period. However, there has been no staff education on the topic, and patient education materials associated with the vaccine are not used by staff nurses very often. Designing and implementing both an education program and a toolkit for staff members to use when teaching new mothers about the importance of the Tdap vaccine in the postpartum period. The purpose of the DNP project is to develop and implement an educational program for staff nurses working on the postpartum unit at the project site and a toolkit for the nurses to use in teaching new mothers about the importance of the Tdap vaccine. Ultimately, it is the intention of this project to positively influence vaccine uptake rates, however, this is out of scope of the DNP project.

Summary

In summary, of all outcome measures available, knowledge is used the most to gather new information and assist with decision-making (Smith, et al. 2012). Clinical nursing educational strategies for instructional information for postpartum mothers relating to the Tdap vaccine and its acceptance is needed. However, not only are educational strategies needed for clinical staff and postpartum mothers; the advancement of nursing practice can be synonymous with guided studies focusing on the value of nursing education and vaccine uptake. The advancement of nursing practice includes nursing and client reactions to certain contexts of health care, while being able to focus on the specific healthcare needs that require nursing solutions that can be used to guide nursing practice (Swartz, 2014).

This project proposal fills the gap in nursing practice concerning the lack of current research and knowledge that is available on how vital current educational resources are for the postpartum population who must make decisions on the adherence of the Tdap vaccine according to the current CDC guidelines. Postpartum mothers who are exposed to educational interventions by healthcare professionals are impacted strongly by changing their attitudes on Tdap vaccination acceptance, and by increasing vaccination rates (Celikel et al., 2014).

Section 3: Collection and Analysis of Evidence

Introduction

The purpose of this project was to provide education to the postpartum nursing staff about the importance of Tdap vaccine education at the participating DNP project site. The education received by the nursing staff and materials provided in the toolkit were relayed to mothers during their postpartum period encouraging them to accept the Tdap vaccine before discharge from the hospital. In this section, I will discuss procedures for collecting and evaluating evidence as well as the tools and techniques used during the project.

Practice-Focused Question

As the challenges concerning the administration of the Tdap vaccination for postpartum mothers increase, so do the chances that infants will contract pertussis during the 2-month neonatal period and before they are vaccinated themselves (American College of Obstetricians and Gynecologists, [ACOG] 2017). For this reason, I relied on current research sponsored by governmental agencies such as the CDC and adopted by nurses who provide daily care. Celikel et al. (2014, p. 2148) explained that health professionals play a pivotal role by helping pregnant women sort through various information sources. By providing formal education during the postpartum period nurse educators can guide nursing practice to prevent the disease of pertussis in infants which could be perpetuated by the refusal of the Tdap vaccine.

Providing focused education to nurses regarding the Tdap vaccination for postpartum women has resulted in a positive increase in vaccination rates, as well as introduce new educational practices (Healy et al., 2009). In one project, the creation and repeated delivery of new educational interventions ensured that the Tdap vaccine was delivered to the greatest number of maternal women before discharge from the hospital (Kao et al., 2012).

Throughout the scope of this DNP project, the organization evaluated the effect of the toolkit and the focused education provided for the nursing staff on the postpartum mothers' decision to either accept or to decline Tdap administration within the allotted time frame before discharge. According to Polit and Beck (2010), causality within evidence-based practice searches for answers to questions about causes and effects. Furthermore, it suggests that since most causes may not be deterministic (e.g., the receiving of education), the probability that an effect will occur (e.g., the mother will accept the vaccine since she is now more knowledgeable of what it is and how it can affect her baby positively) may be increased (Polit & Beck, 2010, p. 224). Thus, the practice-focused question for this project was: Will an educational program and a toolkit implemented for nursing staff members on the postpartum nursing unit result in improved Tdap vaccination rates among new postpartum mothers?

Sources of Evidence

Sources of evidence included findings from pre- and post-education Tdap test results and overall Tdap administration statistics before and after the nursing staff received Tdap education. Other evidence included participants' responses to the

knowledge and attitude scales. Nurses at birthing centers are one of the most important providers of care and influential sources of education for their mothers (Paterson et al., 2016; Dube et al., 2013). Implementation of the education from the toolkit enhanced the knowledge that postpartum mothers already had about the vaccine, it effectively informed those mothers who were lacking information about the vaccine, or the toolkit fostered at best a different way of thinking about the Tdap vaccine that was more positive than the previously negative feelings encountered by the nursing staff. I expected that the transferred new vaccine knowledge from nursing staff would prompt the mothers to consent to the administration of the vaccine before discharge from the birthing center.

Statistical data showed that after the clinical staff received the Tdap education and subsequently educated the postpartum mothers, the birthing center observed a slight increased overall uptake of the vaccine. The Tdap vaccine education and vaccine uptake promoted procedural changes within the birthing center. The evidence obtained from the data showed the relationship that Tdap education had on the nursing staff and their overall ability to transfer their learned knowledge about the vaccine to their postpartum mothers.

Published Outcomes and Research

I searched the literature using Sage Full-Text Collection, Ovid, CINAHL Complete, PubMed, EBSCOhost, ERIC, Wiley Online Library, Cochrane Database of Systematic Reviews, ProQuest, Medline, and Google Scholar databases. Search terms used included *pertussis pertussis and parental education, pertussis education, nursing and pertussis, vaccinations and pertussis, knowledge and pertussis, postpartum and*

pertussis vaccine, antepartum and pertussis vaccine, vaccination education, nurses and vaccine education, maternal vaccination, vaccine uptake, predictors, barriers, and *theory of planned behavior.*

Evidence Generated for the Doctoral Project

Participants. At the time of the project, there were 26 nurses who worked at the birthing center on two shifts. These nurses were the target of this DNP project and all attended mandatory educational program about the importance of the Tdap vaccine, an examination of their own attitudes towards vaccinations, a review of the standing order, and the patient education materials that were included in the toolkit used in the educational program. The project participants were recruited from the birthing center located within a local hospital in Virginia. The project design included all 26 clinical nursing staff members with varied years of experience. Education was provided as a mandatory in-service and self-paced training packet.

Procedures. Before the initiation of the project, an expert panel that included the director of the birthing center, members of the hospital's education department, and the clinical care leaders of the birthing center observed a presentation of the education that was provided electronically to the clinical nursing staff. I included this step so that key stakeholders could evaluate the educational content before it was presented to the staff. This presentation lasted for 30 minutes and included the teaching packet for review that was to be included in the clinical nursing staff education session.

Members of the expert panel received a copy of the American College of Obstetricians and Gynecologists (ACOG) committee opinion statement, copy of the pre-

test and post-test that was used to assess nursing knowledge (see Appendix A), the attitude survey (see Appendix B), Tdap Toolkit (see Appendix C), a Tip Sheet (see Appendix D), and the educational program curriculum (see Appendix E). After the expert panel approved the educational packet, I then presented the education in an in-service type setting for the clinical nursing staff to review the educational self-paced package within a certain period of time.

The expert panel reviewed the pre- and posttests, which are described in Appendix A, for face and content validity. Face validity measured that the desired concept of interest was within the test through subjective judgement (Drost, n.d.). Content validity measured whether the scope of the concept was clear and were represented within the test (Drost, n.d.). There were 10 questions on the test, each worth 10 points, resulting in a score between 0 and 100. In addition, there were also a five-point 10 question Likert scale, which also resulted in a score that ranged between a low of 1 point for negative responses and 5 points for positive responses. Likert scale options included responses from strongly disagree to strongly agree. Both the knowledge test, and the attitude tests were measured at the interval level. The tools have not been used in the past and were tested in the DNP project for internal consistency reliability.

Before the staff reviewed the educational material, a 10-question pre-test to assess prior knowledge were given to all staff nurses to establish a baseline. This was administered during a staff meeting to include as many birthing center staff as possible. The 10-question post-test to potentially show the improvement of the staff nurses' knowledge base related to the importance of Tdap vaccines, and a secondary evaluation

of their attitudes related to the vaccine was conducted a month later at another staff meeting. After at least 90% compliance were achieved with the self-paced informational sessions, tests for internal consistency reliability were conducted.

Protections. For the proposed project to be successful, relationships between the project leader, participants, and the institutional stakeholders were vital. These relationships previous to the beginning of the project, as well as after its conclusion showed that by emphasizing the integration of new knowledge within the clinical care setting prior to practice engagement within the project; and the obtainment of mutual trust, ensured that the findings were relevant to the community they served (Spears, et al. 2014). The current clinical nursing staff were utilized within the project to make the results relevant, sustainable, and potentially, permanent (Spears, et al., 2014). Ensuring that the nursing staff were knowledgeable, while maintaining a relationship with stakeholders who were aware of the project and were supportive was beneficial since project related issues may have arose. Positive outcomes related to stakeholder relationships created future opportunities for research studies.

The protection of the participants of this project were important in that all information obtained was kept in the strictest of confidence. All data collected from staff members, i.e. the pre and post test results were submitted with a code number so that anonymity was evident. The proposed project was guided by the Walden Institutional Review Board (IRB) whose purpose was to ensure that all proposed projects and research studies were following federal guidelines, as well as the university's ethical standards

(Walden University, 2017). The approval number from the Walden IRB for this DNP project is 09-07-18-0478414.

Analysis and Synthesis

To maintain evidence integrity and consistency, subject codes and identification numbers were applied to all instruments utilized throughout the project. Computers were used for data storage and data collection immediately after retrieval from nursing staff and backed up to ensure not being misplaced. Data analysis was completed using the software Statistical Package for the Social Sciences version 25 (SPSS). For this project, data analysis consisted of three types including: a) internal consistency reliability for the knowledge questions and attitude questions, b) Wilcoxon Signed Rank test on knowledge test questions, and c) a Wilcoxon Signed Rank test on the results of the attitude survey.

The created pre- and post-test to assess the clinical nursing staff's knowledge of the Tdap vaccine consisted of 10 multiple choice questions with which the nursing staff were scored from 0-100. This test was verified for content and face validity using a panel of five experts from the clinical agency's education department to correlate items within the test. The expert panel ensured that all included items on the pre-test measured the concepts related to the Tdap vaccine (Groves, Burns, & Gray, 2013, p. 391). The positive outcome of the educational process allowed the staff to enhance their clinical judgment and promoted the provision of quality care (Craig & Smyth, 2012; Eizenberg, 2010; Groves, Burns & Gray, 2013, p.12). To minimize the possibility of extreme outlier results, all data was scrutinized for errors during recording and the uploading of data.

Missing data elements from the knowledge and attitude survey results were not included in the final analyses.

In addition to expert panel review for validity, the knowledge and attitude survey scales were also measured for internal consistency reliability. The 10-question knowledge survey scored .629 using split half reliability for internal consistency. The attitude survey (also 10 questions using a semantic differential type response format) scored Cronbach's Alpha of .70.

Summary

In summary, the collection of data for this project focused on the question of whether Tdap vaccine education provided to the nursing staff would affect a positive change in the uptake of Tdap administration among postpartum mothers. The foundation for data to support this project came from searching various resources to project multiple viewpoints. Statistical data had to be carefully gathered from the project participants to be organized, coded, and stored properly to minimize the potential for loss or errors. This data gathered from the knowledge based pre- and post-test, scales and other instruments were uploaded in the SPSS system immediately after being obtained while being scrutinize for outliers and missing information in preparation to explain the findings and implications.

Section 4: Findings and Recommendations

Introduction

The Tdap vaccination is used to vaccinate against the bacteria *Bordetella pertussis* more commonly known as the "whooping cough." This vaccine is routinely given every 10 years to decrease the incidence of pertussis (CDC, 2013; CDC, 2016c). But, for the maternal population, it is recommended by various leading health care agencies such as ACOG, CDC, and ACIP that every pregnant woman receive the vaccine with each pregnancy regardless of the date of her last Tdap vaccination; the most feasible time for vaccine administration is between 27 and 36 weeks gestation when antibodies can be created by the fetus, though postpartum before discharge is also acceptable (ACIP, 2013; ACOG, 2017; CDC, 2016a)

At the local birthing facility that served as the project site, I observed that many postpartum mothers were refusing the administration of the Tdap vaccine. The mothers either were unaware of the Tdap vaccine or stated that they planned on receiving the vaccine during follow-up visits. In my review of the literature, I found few studies available that were psychosocial in nature and that involved an assessment of decisions for vaccination administration on the basis of increased knowledge levels; most studies were based on epidemiologic data. Thus, the purpose of the doctoral project was to provide a Tdap education toolkit for the nursing staff of the birthing center to support the suggested theory and practice-focused question: Will an educational program and a toolkit implemented for nursing staff members on the postpartum nursing unit ultimately

result in improved Tdap vaccination rates among new postpartum mothers? In this section, I will provide the results of data analysis and consider the implications of findings. I will also offer recommendations for the project site and consider the strengths and limitations of the project.

Findings and Implications

Data collection began after the successful submission of an IRB application and permission for site use. A verbal invitation was extended to the clinical nursing staff and a consent for them to participate was secured prior to the beginning of the project. I collected data via pre- and post-Tdap knowledge testing of nursing staff and vaccine attitude surveys. A total of 24 registered nurses between 22-64 years of age began project participation; however, two participants did not complete as a result of retirement and medical leave resulting in a final sample of 22 nurses participating. The birthing center staff in the project consisted of 83.3% full-time and 16.7% part-time employees. The participants' education level included a college diploma in nursing (12.6%), associate's degree (8.3%), bachelor's degree (70.8%), or master's degree (8.3%).

I precluded parametric testing because pretest and posttest data were not normally distributed. I used a Wilcoxon signed-rank test to ascertain whether the participating RNs' knowledge about the Tdap vaccine would be statistically increased posttest. There was a statistically significant positive increase between the tests with the nurses scoring higher on the posttests (z = -.366, p = .001). The average pretest score was 48.18 (the minimum was 10% and the maximum, 80%) while the average posttest score was 65 with a minimum of 30% and a maximum score of 90%.

I also assessed the participating nurses' attitudes about the Tdap vaccine using an attitude survey (Appendix B) containing anchor words descriptive of negative, neutral, or positive feelings about certain aspects of the Tdap vaccine. In using another Wilcoxon signed-rank test, I found that there was a slight increase of positive feelings after the education, but not enough to be considered statistically significant. This increase was possibly more related to chance due to the small sample size and the close proximity of mean scores rather than to the educational process. Of the 22 staff members who participated in the project, the average score on the attitude pretest was 75.81 (0 indicates a very negative attitude, 100 indicates a very positive attitude). On the posttest, the average score was 78.45 with a minimum of 53 and a maximum of 97. However, the 2.64-point difference was not statistically significant.

Prior to the nurses receiving the educational toolkit, the QI team at the site audited 3 months of postpartum charts (100) from July through September and provided information to me in a deidentified Microsoft Excel file. The QI team reviewed documentation such as evidence of: (a) prior Tdap administration administered between 27-36 weeks, (b) ineligibility to receive the Tdap due to previous administration, (c) Tdap refusal postpartum, and (d) Tdap vaccine administration in the postpartum period before discharge. There were 96 postpartum charts audited from October-December after the nurses received the Tdap educational toolkit assessing the same five variables. Overall, more postpartum mothers received the Tdap vaccination before discharge post toolkit use (15) than previous to its use (10; see Table 1). Of the 42 postpartum mothers who were eligible for the vaccine in the postpartum period before the nurse training, 10 received

vaccine, 12 refused the vaccine, and 20 are unaccounted for (see Table 1). That is, there is no documentation in the medical record that the QI team was able to find describing Tdap status for mothers. In the 3 months following the education, there were 11 postpartum mothers who refused the Tdap vaccine post education which was one fewer than found in the 3-month period before the nurses began using the toolkit, and there were only eight without documentation.

However, a chi-square analysis showed no statistically significant differences, likely due to the small sample size. To reiterate, there was no documentation that the Tdap vaccination was refused or given at all to 20 eligible mothers before the in-service and eight after the education. It might have been the case that the nurses were more attentive to documentation after the in-service, but I do not have evidence supporting this conclusion.

Table 1

Chart Audit Results

Category	Pre education	Post education
Postpartum Mothers	96	93
Received Tdap	10	15
Eligible for Tdap vaccine	42	34
Refused Tdap vaccine	12	11
Unaccounted for: eligible but no documentation of Tdap vaccine or Tdap refusal	20	8

Note. Antenatal pregnant women's charts were omitted from the sample.

There were some unanticipated limitations noted that could have impacted the findings in this project. First, varied sample sizes may have been disproportionate which

could have misrepresented the actual number of postpartum mothers who accepted the Tdap vaccination. Next, all of the nursing staff did not completely participate during the entire project which made the sample size small for the knowledge and attitude survey. Also, many mothers became ineligible to receive the Tdap vaccine since it was previously administered during the antenatal period between 27-36 weeks. Though being vaccinated is beneficial for the infant during the antenatal period and is considered best practice by the ACIP (2013), ACOG (2017), and the CDC (2016a), vaccinating mothers in the postpartum phase before discharge from the hospital would still have been protective of the infant. Postpartum Tdap vaccination would still be considered best practice since it would provide a *cocooning* type of immunity protection to safeguard the infant from pertussis until they are vaccinated at 2 months of age (ACOG, 2017).

The implications as a result of the project indicate that there are opportunities for improving vaccination rates among pregnant and women in the postpartum period before discharge. Though the results of the chart audit were not as positive as they might have been, it is apparent from the results that the staff members are more attentive to the Tdap vaccination process as a result of the change in the number of charts with missing information on refusal or on vaccination (a change from as many as 20 to as few as 8). Accordingly, the site has agreed to repeat the educational process with staff members, to address all who missed it the first time, and to serve as a reminder to those who forget to, or are reluctant to discuss vaccination with postpartum mothers. In an effort to minimize barriers to new mothers about the Tdap vaccine; continue to maintain positive vaccine attitudes, and to change the persistent negative attitudes about the Tdap vaccine, a

discussion group with the nurses on their own attitudes towards vaccines will be included in the proposed education review for those nursing staff who missed the initial education.

As a result of the DNP project, healthcare professionals have gained additional knowledge regarding the Tdap vaccination, and negatives attitudes about the Tdap vaccine have started to change. Encouraging and empowering these staff members to embrace and share more information with postpartum mothers about the positive benefits that the Tdap vaccination can produce for their infant is a contribution to positive social change. The reduction of vaccine hesitancy within the community will increase as more and more scientific data is readily available and released so that nonmedically inclined persons can make informed decisions.

Recommendations

Proposed recommendations for the birthing center at the conclusion of this project include the following:

- Set a monthly goal for Tdap vaccination rates in the postpartum period, achieving 75% of eligible mothers to receive the vaccine with only 25% refusal.
- Change and update the current Tdap screening tool used during the admission process to include more specific questions regarding the mother's Tdap vaccine administration history. Updated questions should include, "Had Tdap vaccine.... *Within 5 years? Within last 10 years, during pregnancy, in prenatal care? or "Don't know*?", "Pregnant or postpartum *at time of screening*,"

"Gestational age *when Tdap received (27-36 weeks)*," and "Tdap refused.... *Reason for* Tdap refusal?"

- Include the Tdap toolkit or comparable Tdap education (see Appendices A, B, C, D, and E) as a part of the unit's yearly formal training, maintaining the updated information needed according to the CDC, ACOG, ACIP and other certified obstetrical forums.
- Work with the Information Technology (IT) department of the hospital to incorporate a "vaccine assessment needed" screen pop-up box that would appear if the vaccine screening has not been completed by the nursing staff. Staff would not be able to discharge the mother from the system until the screening information was completed.

All recommendations were made to the local nursing leadership, and they have agreed to pursue all of them.

Contribution of the Doctoral Project Team

The process of working with the doctoral project team was an exercise in time management and task orientation in that most of the responsibility for the project's progression consisted of the project team which included the DNP student as the project leader, project site birthing center coordinator, unit educator and education department staff, and the birthing center staff members. The DNP student leader made sure that the guidelines for the project were followed per the governing policies of the IRB of both the university as well as the participating site. The DNP student leader also prepared the educational toolkit for the project participants, as well as conducting the secondary data

analysis with the pre and posttest knowledge and attitude surveys, and with the secondary chart audit analyses. Other members of the team included the educational staff and nurse manager at the project site. Their roles were pivotal in that they reviewed the educational toolkit to give suggestions as to its completeness and validity of the subject matter. Lastly, the nursing staff of the birthing center role was giving consent for participation, attending an informal in-service, receiving the educational toolkit packets, taking a pretest for knowledge and attitudes. They also incorporated the information from the educational packets, then applied this new knowledge to their current postpartum teaching methods prior to the mothers' discharge, a positive social change. The DNP student project leader then returned within a few months and met with the project participants and administered a post knowledge test and attitude survey. Once the project was completed, the team met again and the data results were reviewed. Birthing center leadership has agreed to implement the recommendations made during the project and can modify and utilize the Tdap toolkit to create a yearly mandatory educational module.

Strengths and Limitations of the Project

As with any project, there is the potential for strengths and limitations to occur. This project's strengths included leadership and staff buy-in, available statistical information, and nursing staff familiarity of the subject. Leadership and staff buy-in was an important factor because they already knew and understood the importance of Tdap vaccine administration as it related to the project and the population that they served. This was considered a strength for the project since the birthing center leadership and staff already had guidelines in place that they were currently following to provide the

Tdap vaccine during the postpartum period. The goal for the project was to have 26 of the staff (100%) to participate. Out of 26 birthing center employees, 24 nurses total participated with 1 nurse retiring and another absent on medical leave before project completion. Available statistical information was considered a strength since data was readily available at least daily to every three days as mothers delivered and then prepared for discharge. This could also be seen as a limitation since the statistical data obtained was dependent upon how many mothers actually delivered during the project's timeline. During the course of the project, the birthing center's census had multiple declining fluctuations that could have attributed to the staff's inability to utilize information from the toolkit, as well as how many postpartum mothers were available to obtain vaccine administration. Nursing staff familiarity of the project subject was considered a strength because it made maneuvering through the toolkit less intimidating. Most of the nursing staff were familiar with the vaccine and already had a current established knowledge base.

Limitations of the project would include the lack of postpartum mothers available for the staff to share the toolkit information, the lack of staff participation, and the inadequacy of the toolkit. According to Davis et al. (2017), toolkits are designed to develop and organize tasks by specifically providing action-oriented recommendations and tools such as surveys and guidelines. But because literature has shown that toolkits have not been vigorously evaluated and show content variability, their use have not always been able to show a positive impact on health and practice change outcomes (Barac, Stein, Bruce & Barwick, 2014). Although I did show a statistically significant

improvement in knowledge, the change in attitude was not realized. Thus, the resulting impact on documentation and on the nursing staff's ability to convince and persuade new mothers about the importance of the vaccine may not have been as strong as it might have.

The lack of participation of birthing center staff was also a limitation in that not all staff came to the initial project in-service which led to the necessity of the project leader having to follow-up with nursing staff during various alternative times. This proved to be difficult since most of the participants worked varied shifts and some of the nursing staff left their current position within the birthing center. Recommendations for future project would be to attempt to include more participants by reaching out to other local facilities with birthing centers who administer the Tdap vaccine in the postpartum period before discharge. This would serve to increase the number of mothers who are educated on the Tdap topic, and might change their attitudes towards the vaccine.

Section 5: Dissemination Plan

To facilitate dissemination of project findings, I participated in the DNP project setting hospital's yearly skills day. The skills day is a forum featuring all hospital departments and highlighting education that is instituted within those departments. Educational information highlighted by each department is presented in various ways to make sure that the other departments within the hospital are aware of the most current best-practice information within their department. Skills day presented an opportunity for me to disseminate findings from this project to other peers within the facility who may be caring for patients who are currently pregnant or have newborns under 1 year of age, and who are unaware of the proper administration information concerning the Tdap vaccine. The knowledge gleaned from this project is significant since as stated in Section 2, there are few studies that address the attitudes of nurses about the Tdap vaccine. I also am considering presenting the findings of this project to a broader audience via a poster presentation or podium presentation.

Analysis of Self

Self-analysis of my roles as practitioner, scholar, and project manager is important because it allows for an opportunity to reflect on my growth before, during, and after the completion of this project. Being able to assess my strengths and weaknesses allows me to emphasize the importance of being actively engaged in lifelong learning experiences that I anticipate will propel me forward towards my professional goals. As a practitioner, I have the ability to effect positive change in the lives of others by (a) presenting evidence-based information to a broader audience, (b) examining how I

practice in the clinical setting as a clinician, and (c) considering how to be a resource in changing the ways care is provided to the population of clients whom I serve. The aim of critical thinking and discernment of knowledge for me as a doctoral student and scholar is to be able to evaluate, analyze, and synthesize information that I can then use within my profession to create an atmosphere of awareness and learner responsibility. The experience of managing this project has made me more proficient with communication techniques and evidence-based research analysis and bolstered my leadership skills. It has also given me the opportunity to use technical skills, motivate others, and network and foster relationships which I need as a DNP-prepared professional.

The completion of this project posed some challenges I had to overcome. These included the experience of enduring long hours of evaluating information from various sources, making sure that all information that was pertinent to the success and completion of the project was included, and having to restart the project. Overcoming these challenges proved to be a lesson of perseverance that was needed to complete my scholarly journey.

Summary

Pertussis is a historically eradicated respiratory illness among infants but is now on the rise (Masseria et al., 2017). In this context, it is important for healthcare professionals to become change agents and not only educate themselves but use educational programs similar to the one in this project to teach mothers the importance of vaccinating themselves with the Tdap vaccine. For the postpartum mother population, the best time to have the Tdap vaccine administered is with every pregnancy between the

27th and 36th week of gestation, according to ACOG (2017), CDC (2016c), ACIP (2013), and other organizations. But, if mothers are not able to do so, having the administration of the Tdap vaccine during postpartum before discharge from the hospital is the next viable option (Cheng et al., 2015).

The aim of this project was to increase participating nurses' level of nursing knowledge about the Tdap vaccine so that they could share this knowledge with their postpartum mothers and inadvertently raise the project institution's Tdap vaccination rates. Completion of this project provided an opportunity to add to the research available on this subject since there is a lack of viable information and evidenced-based interventions not only for scholars but for actual and potential mothers (see MacDougall & Halperin, 2016). The project also assisted with the improvement of nursing knowledge by using supplemental education about the Tdap vaccine so that it may be used in conjunction with other learning materials available to them at the birthing center to assist postpartum mothers in making decisions related to Tdap vaccine acceptance.

References

Acellular vaccine. (2007). In *The American Heritage medical dictionary online.* Retrieved from https://medical-dictionary.thefreedictionary.com/acellular+vaccine

Advisory Committee on Immunization Practices. (2013). Updated recommendation for use of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine (Tdap) in pregnant women. *Morbidity and Mortality Weekly Report, 62*(7), 131-135. Retrieved from https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6207a4.htm?s_cid=mm6207a4_x

American College of Obstetricians and Gynecologists. (2017). Update on immunization and pregnancy tetanus diptheria and pertussis vaccination. Retrieved from https://www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Update-on-Immunization-and-Pregnancy-Tetnus-Diptheria-and-Pertussis-Vaccination

Barac, R., Stein, S., Bruce, B., Barwick, M. (2014). Scoping review of toolkits as a knowledge translation strategy in health. *BMC Medical Informatic and Decision Making, 14*:121. Retrieved from https: //doi.org/10.1186/s12911-014-0121-7

Baxter, R., Bartlett, J., Fireman, B. et al. (2017). Effectiveness of vaccination during pregnancy to prevent infant pertussis. *Pediatrics*, 139 (5) e20164091. Retrieved from https://doi.org/10.1542/peds.2016-4091

Bernstein, H., Monty, M., Yang, P., & Cohen, A. (2017). Increasing Tdap coverage

among postpartum women: A quality improvement intervention. *American Academy of Pediatrics, 139*(3). doi:10.1542/peds.2016-0607 Retrieved from https://pediatrics.aappublications.org/content/pediatrics/139/3/e2016067.full.pdft

Celikel, A., Ustunsoz, A., & Guvenc, G. (2014). Determination of vaccination status of pregnant women during pregnancy and the affecting factors. *Journal of Clinical Nursing, 23*(15/16), 2142-2150. Retrieved from https://doi:10.1111/jocn.12351

Centers for Disease Control and Prevention. (2013). Vaccine information statement: Tdap (tetanus-diphtheria-pertussis) - vaccines- CDC. Retrieved from http//www.cdc.gov/vaccines/hcp/vis/vis-statements/tdap.html

Centers for Disease Control and Prevention. (2015). Tdap vaccine: What you need to know vaccine information sheet. Retrieved from https://www.cdc.gov/vaccines/hcp/vis/vis-statements/tdap.pdf

Centers for Disease Control and Prevention. (2016a). Pregnant women and Tdap vaccination, Internet panel surveys, United States April 2014 and April 2015. Retrieved from https://www.cdc.gov/vaccines/imz-managers/coverage/adultvaxview/tdap-report.html#preg-education

Centers for Disease Control and Prevention. (2016b). Tetanus, diphtheria, and pertussis VIS. Retrieved from https://www.cdc.gov/vaccines/hcp/vis/vis-statements/tdap.html

Centers for Disease Control and Prevention. (2016c). Who should get diphtheria, tetanus, and whooping cough vaccines: Babies and children, pregnant women, and adults. Retrieved from cdc.gov/vaccines/vpd/dtap-tdap/public/index.html

Centers for Disease Control and Prevention (2017). Pertussis: Whooping Cough. Retrieved from https//www.cdc.gov/pertussis/index.html

Centers for Disease Control and Prevention (2018). Pregnant women and Tdap vaccination, Internet panel survey, United States, April 2017. Retrieved from https://www.cdc.gov/vaccines/imz-managers/coverage/adultvaxview/pubs-resources/tdap-report-2017.html#no-vacc-preg

Cheng, P., Huang, S., Shaw, S., Kao, C., Chueh, H., Chang, S. D. . . . Hsieh, T. T. 2010). Factors influencing women's decisions regarding pertussis vaccine: A decision-making study in the Postpartum Pertussis Immunization Program of a teaching hospital in Taiwan. *Vaccine*, *28*(34), 5641-5647. Retrieved from https://doi.org/10.1016/j.vaccine.2010.05.078

Cheng, P., Huang, S., Su, S., Peng, H., & Chang, C. (2015). Increasing postpartum rate of vaccination with tetanus, diphtheria, and acellular pertussis vaccine by incorporating pertussis cocooning information into prenatal education for group B streptococcus prevention. *Vaccine, 33*(5), 7225-7231. Retrieved from https://doi.org/ 10.1016/j.vaccine.2015.10.121

Cook, A. (2015). *The education-health gradient and causality* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Thesis Global database. (Order No. 10013587)

Crawford, T., Roger, P., & Candlin, S. (2018). Supporting patient education using schema theory: A discourse analysis. *Collegian*, *499*, 1-7. Retrieved from https://doi.org/10.1016/j.colegn.2017.12.004

Craig, J. V., & Smyth, R. L. (2012). *The evidence-based practice manual for nurses* 3rd Ed.). Edinburgh, Scotland: Churchill Livingstone.

Davis, M., Howk, S., Spurlock, M., McGinnis, P., Cohen, D., & Fagnan, L. (2017). A qualitative study of clinic and community member perspectives on intervention toolkits: "Unless the toolkit is used it won't help solve the problem." *BMC Health Services Research, 17*:497, 1-9. Retrieved from https://doi.org/10.1186/s12913-017-2413-4

De Greeff, S. C., Mooi, F. R., Westerhof, A., Verbakel, J. M., Peeters, M. F., Heuvelman, C. J., & ... de Melker, H. E. (2010). Pertussis disease burden in the household: How to protect young infants. *Clinical Infectious Diseases: An Official Publication of the Infectious Diseases Society of America*, *50*(10), 1339-1345. Retrieved from https://doi.org/10.1086/652281

Dempsey, A., Brewer, S., Sevick, C., Pyrzanowski, J., Mazzoni, S., & O'Leary, S. (2015). Tdap vaccine attitudes and utilization among pregnant women from a high-risk population. *Human Vaccines & Immunotherapeutics, 12*(4), 872-878. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4962928/ doi:10.1080/21645515.1094594

Diphtheria Pertussis and Tetanus Vaccine (DPT, 2009). In Mosby's Medical Dictionary, 8th ed. Retrieved from https://medical-dictionary.thefreedictionary.com/diptheria+and+tetanus+pertussis+vaccine

Diphtheria Tetanus acellular pertussis Vaccine (Dtap, 2009). In *Medical Dictionary online.* Retrieved from https://medical-

dictionary.thefreedictionary.com/DTap+vaccine

Drost, E. (n.d.). Validity and reliability in social science research. *Education Research and Perspectives, 38*(1), 105-123.

Dube, E., Laberge, C., Guay, M., Bramadat, P., Roy, R., & Bettinger, J. (2013). Vaccine hesitancy. *Human Vaccine & Immunotherapeutics, 9*(8), pp. 1763-1773. doi:10.4161/hv.24657 Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3906279/

Eide, E., & Showalter, M. (2011). Estimating the relation between health & education: What do we know & what do we need to know? Economics of Education Review, 30(5), 778-791. Retrieved from https://doi.org/10.1016/j.econedurev.2011.03.009

Eizenberg, M. M (2010). Implementation of evidence-based nursing practice: Nurses' personal and professional factors. *Journal of Advanced Nursing, 67*(1), 33-42.

Ellingson, M., & Chamberlain, A. (2018). Beyond the verbal: Pregnant women's preferences for receiving influenza & tdap vaccine information from their obstetric care providers. *Human Vaccines & Immunotherapeutics*, *14*(3), 767-771. Retrieved from https://doi.org/10.1080/21645515.2018.1425114

Gannon, M., Qaseem, A., Snooks, Q., & Snow, V. (2012). Improving adult immunization practices using a team approach in the primary care setting. *American Journal of Public Health*, 102(7), e46-52. Retrieved from https://doi-org.ezp.waldenulibrary.org/10.2105/AJPH.2012.300665

Grove, S. K., Burns, N., & Gray, J. R. (2013). The practice of nursing research: Appraisal, synthesis, and generation of evidence (7th Ed.). St. Louis, Missouri:

Elsevier.

Healy, C. M., Rench, M. A., and Baker, C. J. (2013). Importance of timing of maternal Tdap immunization and protection of young infants. *Clinical Infectious Disease, 56,* 539-544.

Healy, C., Ng, N., Taylor, R., Rench, M. & Swaim, L. (2015). Tetanus & diphtheria toxoids and acellular pertussis vaccine uptake during pregnancy in a metropolitan tertiary care center. Vaccine, 33, 4983-4987. Retrieved from http://dx.doi.org/10.1016/j.vaccine.2015.07.018

Healy, C., Rench, M., Castagnini, L. & Baker, C. (2009). Pertussis immunization in a high-risk postpartum population. Vaccine, 27, p. 5599-5602. Retrieved from https://doi.org/10.1016/j.vaccine.2009.07.030

Hinman, A. (1984). The pertussis vaccine controversy. *Public Health Reports, 99(3),* 255-259.

Jalal-Eddeen & Abdelrahim, K. (2015). Towards elimination of maternal & neonatal tetanus in the developing countries: A look at the theory of planned behavior. *European Journal of Preventative Medicine, 3*(4), pp. 110-116. doi: 10.11648/j.ejpm Retrieved from http://article.sciencepublishinggroup.com/html/10.11648.j.ejpm.20150304.13.html

Kao, C.-C., Huang, S.-Y., Cheng, P.-J., Shaw, S.-W., Chueh, H.-Y., Chang, S.-D....Hsieh, T.-T. (2012). Factors associated with the intention to recommend pertussis vaccination for postpartum women: A survey in Taiwan of obstetrician-

gynecologist's knowledge, beliefs, and attitudes. *Taiwanese Journal of Obstetrics and Gynecology, 51*(2), 222-228. Received from https://doi.org/10.1016/j.tjog.2012.04.010

Kriss, J. L., Frew, P. M., Cortes, M., Malik, F. A., Chamberlain, A. T., Seib, K. . . . Omer, S. B. (2017). Evaluation of two vaccine education interventions to improve pertussis vaccination among pregnant African American women: A randomized controlled trial. Vaccine, 35(11), 1551-1558. http://dx.doi.org.ezp.waldenulibrary.org/10.1016/j.vaccine.2017.01.037 Retrieved from http://ezp.waldenulibrary.org/login?url=https://search-proquest-com.ezp.waldenulibrary.org/docview/1872569173?accountid=14872

MacDougall, D. & Halperin, S. (2016). Improving rates of maternal immunization: Challenges and opportunities. *Human Vaccines & Immunotherapeutics, 12*(4), pp. 857-865. doi: 10.1080/21645515.2015.1101524 Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4962946/

Madden, T. Ellen, p., Ajzen, I. (1992). A comparison of the theory of planned behavior and the theory of reasoned action. *Personality and Social Psychology Bulletin, 18*(1), 3-9. Retrieved from doi: 10.1177/01467292181001

Masseria, C., Martin, C., Kristinarajah, G., Becker, L., Buikema, A., & Tan, T. (2017). Incidence and burden of pertussis among infants less than 1 year of age, 36(3): e54-e61. doi: 10.1097/INF.0000000000001440 Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5312729/pdf/inf-36-e54.pdf

Merriam-Webster Dictionary (2015). Antenatal definition. Retrieved from

http://www.merriam-webster.com/dictionary/antenatal

Merriam-Webster Dictionary (2015). Postpartum definition. Retrieved from http://www.merriam-webster.com/dictionary/postpartum

Merriam-Webster Dictionary (2015). Maternal definition. Retrieved from http://www.merriam-webster.com/dictionary/maternal

Merriam-Webster Dictionary (2015). Retrieved from http://www.merriam-webster.com/dictionary/clinician

Myers, K. (2016). Predictors of maternal vaccination in the United States: An integrative review of the literature. *Vaccine, 34,* pp. 3942-3949. Retrieved from http://dx.doi.ort110:1016/j.vaccine.2016.06.042

Munoz, F. (2007). Vaccination during pregnancy. *Women's Health*, *3*(2), p. 227-241.

Paterson, P., Meurice, F., Stanberry, L., Glismann, S., Rosenthal, S. & Larson, H. (2016). Vaccine hesitancy & healthcare providers. *Vaccine,* 34, pp. 6700-6706. Retrieved from http://dx.doi.org/10.1016/j.vaccine.2016.10.042

Polit, D. F. & Beck, C. T. (2010). Quantitative research design: Nonexperimental studies. In H. Surrena, H. Koggutt, E. Kors & M. Kinsella (Eds.*). Essentials of nursing research: Appraising evidence for nursing practice* (Seventh Ed.). (pp.234-235). Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins.

Polit, D. F. & Beck, C. T. (2010). Qualitative research design: Overview of research design issues. In H. Surrena, H. Kogut, E. Kors & M. Kinsella (Eds.*). Essentials of nursing research: Appraising evidence for nursing practice* (Seventh Ed.). (p.224). Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins.

Proffeto-McGrath, J. (2005). Critical thinking and evidence-based practice. *Journal of Professional Nursing, 21*(6), 364-371. Retrieved from https://doi.org/10.1016/j.profnurs.2005.10.002

Riley, J. & Eckert, L. (2015, January 21). Tdap vaccination in pregnancy: A mother's gift to her baby. [Webinar]. Retrieved from immunizationforwomen.org/providers/resources/webinars/tdap.php

Rosenstock, I., Stretcher, V. & Becker, M. (1988). Social learning theory and the health belief model. *Health Education Quarterly, 15*(2), 175-183.

Silverman, N. (2014). Tdap vaccination during pregnancy. Contemporary Obstetrics and Gynecology, 59(4), 66-68, 70. Retrieved from http://ezp.waldenulibrary.org/login?url=https://search-proquest-com.ezp.waldenulibrary.org/docview/1609198171?accountid=14872

Smith, P., Humiston, S., Marcuse, E., Zhao, Z., Dorell, C., Howes, C. & Hibbs, B. (2011). Parental delay or refusal of vaccine doses, childhood vaccination coverage at 24 months of age, and the health belief model. *Public Health Reports, 126*(2), 135-146.

Smith, S., Barrett, A., Trevena, L., Simpson, J., Jansen, J. & McCaffery, K. (2012). A theoretical framework for measuring knowledge in screening decisional aid trials. Patient Education and Counseling, 89(2), 330-336. Retrieved from https://doi.org.ezp.waldenulibrary.org/10.1016/j.rec.2012.07.009

Song, G. (2014). Understanding public perceptions of benefits and risks of childhood vaccinations in the United States. *Risk Analysis, 34*(3), 541-555. Retrieved from

https://onlinelibrary.wiley.com/doi/epdf/10.111/risa.12114

Spears, W., Tsoh, J., Potter, M. Weller, N., Brown, A., Campbell-Vohtal, K., Getrich, C., Sussman, A., Pascoe, J. & Neale, A. (2014). Use of community engagement strategies to increase research participation in practice-based research networks (PBRNS). Journal of the American Board of Family Medicine, 27(6), 763-771. Retrieved from https://doi.org/10.3122/jabfm.2014.06.140059

Strohfus, P., Kim, S., Palma, S., Duke, R., Remington, R., & Roberts, C. (2017). Immunizations challenge healthcare personnel and affects immunization rates. *Applied Nursing Research, 33,* 131-137. Retrieved from http://dx.doiorg/10.1016/J.pne.2016.11.005

Swartz, M. (2014). Critical theory as a framework for academic nursing practice. *Journal of Nursing Education, 53*(5), 271-272. Retrieved from http://dx.doi.org.exp.waldenulibrary.org/10.3928/01484834-20140408-01

Tetanus diphtheria acellular pertussis (Tdap, 2009). In *Medical Dictionary online.* Retrieved from https://medical-dictionary.thefreedictionary.com/Tdap

Unisa, M. (2017). Improving pertussis education for postpartum women and their family members. (Doctor of Nursing Practice). Retrieved from https://scholarworks.umass.edu/nursing_dnp_capstone/127. Pg. 14-19

Virginia Department of Health (2018). Ten-year trend of reported cases of notifiable diseases, Virginia 2007-2016. Retrieved from www.vdh.virginia.gov/surveillance-and-investigation/virginia-reportable-disease-surveillance-data/tables-of-selected-reportable-diseases-in-virginia-by-year-of-report/#16

Virginia Department of Health (2018). Top 10 communicable diseases Portsmouth (city). Retrieved from www.vdh.virginia.gov/data/communicable-diseases/

Walden University (2017). Institutional review board. Retrieved from https://academicguides.waldenu.edu/doctoralcapstoneresources/phdces/irb

Appendix A: Pre- and Posttest Knowledge Questions

1. Newborns have an automatic immunity to pertussis because the mother does:
    a. Always true
    b. Never true
    c. Sometimes true depending on when the mother had her primary immunization and the date of the last booster
    d. Sometimes true depending on the mother's nationality

2. The "100-day cough" occurs during one of three clinical courses of the disease:
    a. Always during the paroxysmal stage
    b. Never during the paroxysmal stage
    c. Sometimes during the paroxysmal stage with the creation of thin mucous
    d. Occasionally during the paroxysmal stage without the production of mucus

3. The current ideal recommendation for mothers to receive the Tdap vaccination is
    a. Always during the 27th and 36th week gestation with each pregnancy
    b. Never during the 27th and 36th week gestation of every pregnancy
    c. During the 27th and 36th week gestation of every pregnancy only if vaccinated previously
    d. During the 27 through the 36th week gestation of every pregnancy only if not previously vaccinated

4. Maternal education when given by the clinical nursing staff should
    a. Always include the Vaccine Insurance Statement or be in violation of the Vaccine Inquiry Act
    b. Sometimes include the Vaccine Insurance Statement, only if in violation of the Vaccine Inquiry Act
    c. Always include the Vaccine Information statement regardless or you likely have violated the Vaccine Inquiry Act
    d. Never include the Vaccine Information Statement, since violation of the Vaccine Inquiry Act is unlikely

5. When nursing staff utilize the "S" within the "Share a recommendation" as a talking point for providers with mothers, they really are
    a. "Stating" reasons the Tdap vaccine is under-utilized for the mother's health risk factors
    b. "Suggesting" reasons the Tdap vaccination is under-utilized for the mother's health risk factors
    c. "Stating" reasons the Tdap vaccine is recommended for the mother's health risk factors
    d. "Suggesting" reasons the Tdap vaccine is refused for the mother's health risk factors

6. When administering Boostrix vaccines, the nurse is knowledgeable that the vaccine can be given to
    a. infants, children, and adults always intramuscularly
    b. infants, children and adults always intravenous
    c. children and adults almost always intramuscularly and rarely intravenous
    d. children and adult always intramuscularly and never intravenous

7. While treating a mother with a diagnosis of pertussis, the clinical nursing staff should expect the doctor to order
    a. Clotrimazole or Azithromycin
    b. Clarithromycin or Azithromycin
    c. Trimethoprim-sulfonamide or Azithromycin
    d. Toyocamycin or Azithromycin

8. The nurse demonstrates her knowledge regarding Tdap storage and handling with accuracy when she
    a. stores the vaccine and protects it from the light at all times
    b. thaws the vaccine before use, then refrigerates the remaining vaccine
    c. refrigerates the vaccine between 2 degrees celsius and 8 degrees celsius(35F-46F)
    d. discards the vial after its been opened within an ½ hour

9. A discharged mother calls the postpartum unit and states, “I received a Tdap vaccination before discharge yesterday and now my upper arm is painful and swollen what should I do?” The nurse verbalizes competence when she replies
    a. “This is called anaphylaxis and you should be seen immediately”
    b. “This is an arthus reaction, no treatment is needed but you should not receive tetanus toxoid more frequently than necessary.”
    c. “This are early warning signs of a systemic reaction. You will need to notify your doctor for treatment.”
    d. “This reaction is common, but you will need antibiotics prophylactically.”

10. Nursing staff is including the “Case” method within their teaching strategy when they discuss with the mothers
    a. The experiences of other mothers who accepted the Tdap vaccine and benefited from its use.
    b. The positive aspects of the Tdap vaccine.
    c. Signs and symptoms of Tdap vaccine reactions.
    d. Results of the most current vaccine study relating to postpartum mothers.

Appendix B: Pre- and Posttest Attitude Questions

On a scale of 1 to 10, rank your viewpoint to each question using the anchor words. 0-4 equates negativity, 5 is equating a neutral attitude, and 6-10 equates to a more positive viewpoint.

	Attitude Questions	
Bad	My attitude towards all vaccinations is…….	Good
0	1 2 3 4 5 6 7 8 9	10
Disagree	I think new mothers should always get immunizations no matter what kind.	Agree
0	1 2 3 4 5 6 7 8 9	10
Unimportant	I feel that it is essential that mothers are knowledgeable about vaccines and their importance.	Important
0	1 2 3 4 5 6 7 8 9	10
False	I agree that the Centers for Disease Control and Prevention is a valuable resource for mothers regarding Tdap vaccine information.	True
0	1 2 3 4 5 6 7 8 9	10
Invalid Statement	Postpartum mothers have the impression that clinical nursing staff do not have knowledge nor time to provide them vaccine education even if requested.	Valid Statement
0	1 2 3 4 5 6 7 8 9	10
Negative	As a member of the clinical staff, I have enough education to teach postpartum mothers about the Tdap vaccine.	Positive
0	1 2 3 4 5 6 7 8 9	10
Questionable	Clinical nursing staff do a commendable job in providing vaccine education to postpartum mothers.	Definitive
0	1 2 3 4 5 6 7 8 9	10
Uncertain	The administration of the Tdap vaccine to postpartum mothers decreases incidences of pertussis in their infants.	Certain
0	1 2 3 4 5 6 7 8 9	10
Unreliable	My current knowledge about the Tdap vaccine if provided to postpartum mothers is dependable.	Reliable
0	1 2 3 4 5 6 7 8 9	10
Unsatisfactory	The current Tdap vaccine guidelines and standing orders for staff are adequate.	Satisfactory
0	1 2 3 4 5 6 7 8 9	10

Appendix C: Toolkit for Postpartum Nurses

The CDC's (2016c) Vaccine Information Statement for the Tdap vaccine follows.

VACCINE INFORMATION STATEMENT

Tdap Vaccine

(Tetanus, Diphtheria and Pertussis)

What You Need to Know

Many Vaccine Information Statements are available in Spanish and other languages. See www.immunize.org/vis

Hojas de información sobre vacunas están disponibles en español y en muchos otros idiomas. Visite www.immunize.org/vis

1 Why get vaccinated?

Tetanus, diphtheria and **pertussis** are very serious diseases. Tdap vaccine can protect us from these diseases. And, Tdap vaccine given to pregnant women can protect newborn babies against pertussis..

TETANUS (Lockjaw) is rare in the United States today. It causes painful muscle tightening and stiffness, usually all over the body.

- It can lead to tightening of muscles in the head and neck so you can't open your mouth, swallow, or sometimes even breathe. Tetanus kills about 1 out of 10 people who are infected even after receiving the best medical care.

DIPHTHERIA is also rare in the United States today. It can cause a thick coating to form in the back of the throat.

- It can lead to breathing problems, heart failure, paralysis, and death.

PERTUSSIS (Whooping Cough) causes severe coughing spells, which can cause difficulty breathing, vomiting and disturbed sleep.

- It can also lead to weight loss, incontinence, and rib fractures. Up to 2 in 100 adolescents and 5 in 100 adults with pertussis are hospitalized or have complications, which could include pneumonia or death.

These diseases are caused by bacteria. Diphtheria and pertussis are spread from person to person through secretions from coughing or sneezing. Tetanus enters the body through cuts, scratches, or wounds.

Before vaccines, as many as 200,000 cases of diphtheria, 200,000 cases of pertussis, and hundreds of cases of tetanus, were reported in the United States each year. Since vaccination began, reports of cases for tetanus and diphtheria have dropped by about 99% and for pertussis by about 80%.

2 Tdap vaccine

Tdap vaccine can protect adolescents and adults from tetanus, diphtheria, and pertussis. One dose of Tdap is routinely given at age 11 or 12. People who did *not* get Tdap at that age should get it as soon as possible.

Tdap is especially important for healthcare professionals and anyone having close contact with a baby younger than 12 months.

Pregnant women should get a dose of Tdap during **every pregnancy**, to protect the newborn from pertussis. Infants are most at risk for severe, life-threatening complications from pertussis.

Another vaccine, called Td, protects against tetanus and diphtheria, but not pertussis. A Td booster should be given every 10 years. Tdap may be given as one of these boosters if you have never gotten Tdap before. Tdap may also be given after a severe cut or burn to prevent tetanus infection.

Your doctor or the person giving you the vaccine can give you more information.

Tdap may safely be given at the same time as other vaccines.

3 Some people should not get this vaccine

- A person who has ever had a life-threatening allergic reaction after a previous dose of any diphtheria, tetanus or pertussis containing vaccine, OR has a severe allergy to any part of this vaccine, should not get Tdap vaccine. Tell the person giving the vaccine about any severe allergies.
- Anyone who had coma or long repeated seizures within 7 days after a childhood dose of DTP or DTaP, or a previous dose of Tdap, should not get Tdap, unless a cause other than the vaccine was found. They can still get Td.
- Talk to your doctor if you:
  - have seizures or another nervous system problem,
  - had severe pain or swelling after any vaccine containing diphtheria, tetanus or pertussis,
  - ever had a condition called Guillain-Barré Syndrome (GBS),
  - aren't feeling well on the day the shot is scheduled.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

4 Risks

With any medicine, including vaccines, there is a chance of side effects. These are usually mild and go away on their own. Serious reactions are also possible but are rare.

Most people who get Tdap vaccine do not have any problems with it.

Mild problems following Tdap
(Did not interfere with activities)

- Pain where the shot was given (about 3 in 4 adolescents or 2 in 3 adults)
- Redness or swelling where the shot was given (about 1 person in 5)
- Mild fever of at least 100.4°F (up to about 1 in 25 adolescents or 1 in 100 adults)
- Headache (about 3 or 4 people in 10)
- Tiredness (about 1 person in 3 or 4)
- Nausea, vomiting, diarrhea, stomach ache (up to 1 in 4 adolescents or 1 in 10 adults)
- Chills, sore joints (about 1 person in 10)
- Body aches (about 1 person in 3 or 4)
- Rash, swollen glands (uncommon)

Moderate problems following Tdap
(Interfered with activities, but did not require medical attention)

- Pain where the shot was given (up to 1 in 5 or 6)
- Redness or swelling where the shot was given (up to about 1 in 16 adolescents or 1 in 12 adults)
- Fever over 102°F (about 1 in 100 adolescents or 1 in 250 adults)
- Headache (about 1 in 7 adolescents or 1 in 10 adults)
- Nausea, vomiting, diarrhea, stomach ache (up to 1 or 3 people in 100)
- Swelling of the entire arm where the shot was given (up to about 1 in 500).

Severe problems following Tdap
(Unable to perform usual activities; required medical attention)

- Swelling, severe pain, bleeding and redness in the arm where the shot was given (rare).

Problems that could happen after any vaccine:

- People sometimes faint after a medical procedure, including vaccination. Sitting or lying down for about 15 minutes can help prevent fainting, and injuries caused by a fall. Tell your doctor if you feel dizzy, or have vision changes or ringing in the ears.
- Some people get severe pain in the shoulder and have difficulty moving the arm where a shot was given. This happens very rarely.
- Any medication can cause a severe allergic reaction. Such reactions from a vaccine are very rare, estimated at fewer than 1 in a million doses, and would happen within a few minutes to a few hours after the vaccination.

As with any medicine, there is a very remote chance of a vaccine causing a serious injury or death.

The safety of vaccines is always being monitored. For more information, visit: **www.cdc.gov/vaccinesafety/**

5 What if there is a serious problem?

What should I look for?

- Look for anything that concerns you, such as signs of a severe allergic reaction, very high fever, or unusual behavior.
- Signs of a severe allergic reaction can include hives, swelling of the face and throat, difficulty breathing, a fast heartbeat, dizziness, and weakness. These would usually start a few minutes to a few hours after the vaccination.

What should I do?

- If you think it is a severe allergic reaction or other emergency that can't wait, call 9-1-1 or get the person to the nearest hospital. Otherwise, call your doctor.
- Afterward, the reaction should be reported to the Vaccine Adverse Event Reporting System (VAERS). Your doctor might file this report, or you can do it yourself through the VAERS web site at **www.vaers.hhs.gov**, or by calling **1-800-822-7967**.

VAERS does not give medical advice.

6 The National Vaccine Injury Compensation Program

The National Vaccine Injury Compensation Program (VICP) is a federal program that was created to compensate people who may have been injured by certain vaccines.

Persons who believe they may have been injured by a vaccine can learn about the program and about filing a claim by calling **1-800-338-2382** or visiting the VICP website at **www.hrsa.gov/vaccinecompensation**. There is a time limit to file a claim for compensation.

7 How can I learn more?

- Ask your doctor. He or she can give you the vaccine package insert or suggest other sources of information.
- Call your local or state health department.
- Contact the Centers for Disease Control and Prevention (CDC):
  - Call **1-800-232-4636 (1-800-CDC-INFO)** or
  - Visit CDC's website at **www.cdc.gov/vaccines**

Vaccine Information Statement
Tdap Vaccine

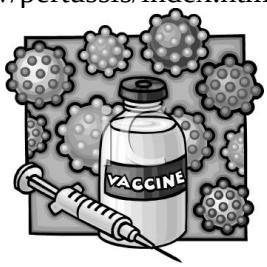
2/24/2015

42 U.S.C. § 300aa-26

Office Use Only

Appendix D: Tips Sheet

Adapted from the Centers for Disease Control and Prevention Website (2017). Pertussis (Whooping Cough). Retrieved from https//www.cdc.gov/pertussis/index.html



Tdap Vaccine: Information You Need but Afraid to Ask

What is a vaccine?

- A vaccine (vax-een) is a medication given to fight bad germs that try to take over your body to make you and your baby sick. -This medicine is used to fight the bad germ whose name is **Pertussis** (Per-tus-sis).

- This germ will cause you or your baby to cough really hard for a long time, and you might not be able to breath. When you cough, the germs float through the air and your baby breathes it in and gets an infection. This is called "whooping cough."

- Moms can get better faster than their babies. If your baby can not breath well, and coughs for a long time, they will be put in the hospital. If the baby gets sicker, he or she could later die from this germ if not treated with antibiotics.

What is the name of the vaccine?

- There are two vaccines for moms called...1) Boostrix (Boo-strix) or 2) Adacel (Ada-seal)
- They are medicine that is given with a with a needle in your arm. Yes...it is a shot.

How many times do I have to take this shot?

- You only need to get this shot once every 10 years if it was given to you as a child.

- If you did not get the medicine (vaccine), you can get it when you are 27-36 weeks pregnant **or** after you have your baby before you go home from the hospital. Your choice. BUT....because you did not get the medicine when you were a child, you would need 2 more shots to be done for 10 years.

What will it do to me? Will it make me sick?

- It will keep you and your baby from getting sick from the bad germ!

- No, it will not make you sick, and it will not "give" you pertussis the bad germ. What the medicine (vaccine) will do is cause your body to make super ninja fighting cells to find, fight, and kill the bad pertussis germs.

- Like with any medicine, it **might** make you feel bad before you feel better. People sometimes feel this way because of the ingredients in the medicine. The feeling will go away.

- You might have a sore arm, swelling or a rash from the shot. Some people get a headache, sore throat, low fever, diarrhea, have a tummy ache, or throw-up. If you feel worse.... call the doctor.

I'm sorry, I'm scared and I don't believe you.....

- That's ok, we are here to help you. On your computer, iPad or your cell phone google

    a. For medication information sheets type: www.vis/current-vis.html or www.cdc.gov/vaccines/hcpvis/current-vis.html

    b. For a list of side effects from the medicine type: www.cdc.gov/vaccines/vac-gen/side-effects.htm

    c. For a video of what a baby looks like coughing with that bad germ pertussis type: https://youtu.be/S3oZrMGDMMw

    d. For a video of an adult with whooping cough type: https://youtu.be/31tnXPlhA7w

    e. Cleveland Clinic doctor explaining whooping cough type: https://youtu.be/84JvqZbnwiQ

If you have questions, please ask your doctors and nurses.... we are here to help you.

Appendix E: Educational Program for Postpartum Staff Nurses

Educational Curriculum Plan Example (for in-services etc. to obtain CEUs)

Student: Birthing center staff nurses

Title of Project: Targeted Education for the Prevention of Vaccine Refusal

Problem: The lack of resources for nursing staff that can be used to bring insight to new mothers about the importance of the Tdap vaccine.

Purpose: The purpose of this study is to development an educational process for the postpartum nursing staff and provide them with a toolkit supporting the administration of the Tdap vaccine during the postpartum inpatient stay for eligible mothers.

Practice Focused Question: Will an educational program and a toolkit implemented for nursing staff members on the postpartum nursing unit ultimately result in improved TDAP vaccination rates among new postpartum mothers?

Objectives At the conclusion of this educational experience the learner will be able to -	Content Outline	Evidence	Method of presenting (See Appendix E)	Method of Evaluation P/P Item
1. Define the significance and the purpose of the educational curriculum plan for the Tdap educational toolkit.	1.Introduction a. Problem	1A. Centers for Disease Control and Prevention (CDC, 2016). Who should get diphtheria, tetanus and whooping cough vaccines: Babies and children, pregnant women and adults. Retrieved from cdc.gov/vaccines/vpd/dtap-tdap/public/index.ht	1. Oral	Pre & Posttest on knowledge and attitude

		ml 1A. Centers for Disease Control and Prevention (CDC, 2016). Pregnant women and tdap vaccination, internet panel surveys, United States April 2013 and April 2014. Retrieved from https://www.cdc.gov/vaccines/imz-		
2. Define Pertussis	2. A. What is pertussis B. Causes & Transmission C. Treatmen t -Slide 3	2 A, B, C. Center for Disease Control (2017). Pertussis. Retrieved from https://www.cdc.gov/pertussis/clinical/disease-specifics.html	Oral PowerPoint Handout	Pre-& Posttest on knowledge and attitude
3. Discuss Tdap background, clinical disease course & current vaccination trends	3.Stage 1 Catarrhal Stage 2 Paroxysmal Stage 3 Convalescent -Slide 4	3. Center for Disease Control (2017). Clinical features. Retrieved from https://www.cdc.gov/pertussis/clinical/features.html	Oral discussion PowerPoint	Pre-& Posttest on knowledge and attitude
4. Fast facts	4. A. Recommended dosage for pregnant/postpar-tum women B. Pertussis cases in the United States	4. Center for Disease Control (2017) Fast facts. Retrieved from https://www.cdc.gov/pertussis/fast-facts.html Center for Disease	Oral discussion	Pre-& Posttest on knowledge and attitude

	C. Where the name come from D. When not to administer the vaccine Slide 5	Control (2018). Vaccine handling and storage toolkit. Retrieved from https://www.cdc.gov/vaccines/hcp/admin/storage/toolkit/index.html	PowerPoint	
5. Vaccination trends	-Slide 6	5. Center for Disease Control (2018). Surveillance and reporting. Retrieved from https://www.cdc.gov/pertussis/downloads/pertuss-surv-report.pdf	Oral discussion PowerPoint	Pre-& Posttest on knowledge and attitude
6. Learning theories related to Tdap vaccine	6. A. Social learning theory B. Theory of planned behavior C. Health belief model	6. A. Rosenstock, I., Stretcher, V. & Becker, M. (1988). Social learning theory and the health belief model. *Health Education Quarterly, 15(2),* 175-183. B. Myers, K. (2016). Predictors of maternal vaccination in the United States: An integrative review of the literature. Vaccine, 34, pp. 3942-3949. Retrieved from http://dx.doi.ort110:1016/j.vaccine.2016.06.042 C. Jones and	Oral discussion	Pre-& Posttest on knowledge and attitude

		Bartlett (N.D.)		
7. Best practice recommendations	A. Centers for Disease Control B. Advisory Committee on Immunization Practices C. American Colleges of Obstetricians and Gynecology -Slide 8	7. A. Center for Disease Control (2017). Pregnancy and whooping cough. Retrieved from https://www.cdc.gov/pertussis/pregnant/mom/get-vaccinated.html B. Center for Disease Control (2013). Advisory Committee on Immunization Practices (ACIP). Retrieved from ttps://www.cdc.gov/mmwr/preview/mmwrhtml/mm6207a4.htm C. American Colleges of Obstetricians and Gynecologists (2017). Update on Immunization and Pregnancy: Tetanus, diphtheria, and pertussis vaccination. Retrieved from https://www.acog.org/Clinical-Guidance-and-Publications/Committee_Opinions/Committee_on_Obstetric_Practice/Update_on_Immunization_and_Pregnancy_T	Oral discussion & PowerPoint	Pre-& Posttest on knowledge and attitude

		etanus_Diphtheria-and-Pertussis-Vaccination		
8. Tdap Vaccines	8. Medication A. Adacel B. Boostrix -Slides 9, 10, 11, & 12	A. United States National Library of Medicine (2017). Adacel tdap: Drug label information. Retrieved from https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a41b7601-34f2-4a88-a406-f53011fb7de1#S16 B. United States National library of Medicine (2016). Boostrix: Drug label information. Retrieved from https://dailymed.nlm.nih.gov/dailymed/search.cfm?labeltype=all&query=Boostrix	Handout Oral Discussion PowerPoint	Pre-& Posttest on knowledge and attitude
9. Provider Talking Points	A. Assess vaccination status B. Share a recommendation C. Personalized the discussion D. Finish strong	American College of Nurse Midwives (2014). Talking points for providers about immunization in pregnancy and postpartum. Retrieved from http://www.midwife.org/ACNM/files/ccLibraryFiles/Filename/000000004397/VaccinationTalkin	Oral discussion PowerPoint	Pre-& Posttest on knowledge and attitude

	Slide 16	gPointsforProviders-091514.pdf		
10. Learning resources	A. Centers for Disease Control Vaccine Storage and Handling Toolkit B. Immunization Action Coalition vaccine information statements C. Talking Points for Providers about Immunization in Pregnancy and Postpartum D. Administering Vaccines: Dose, Route, Site, and Needle size E. Vaccines and preventable Diseases - Slide 17	A. https://www.cdc.gov/vaccines/hcp/admin/storage/toolkit/storage-handling-toolkit.pdf B. http://www.immunize.org/vis/ C. http://www.midwife.org/ACNM/files/ccLibraryFiles/Filename/000000004397/VaccinationTalkingPointsforProviders-091514.pdf D. http://www.immunize.org/catg.d/p3085.pdf E. https://www.cdc.gov/vaccines/vpd/dtap-tdap-td/hcp/administering-vaccine.html	Oral discussion Handout	Pre-& Posttest on knowledge and attitude