

Preparing Nurses for Vaccine Conversations

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Acknowledgments

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Dedication

I want to dedicate this project to my daughter, Kaylee. You have shown considerable patience with the time that I needed to be successful in this journey. I am constantly in awe of your growth and maturity. You have weathered the storms, possessed great resilience and supported me the entire time. I will never forget your words of encouragement the night before I took my certification exam. In the calmest yet reassuring way, you said: “I don’t know why you are worried because you know this stuff.” To see that you believed in me and my ability to conquer that test was all the encouragement I needed. I only hope that my words of encouragement throughout your life will inspire you in the same manner.

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Abstract

Vaccines are the most cost-effective preventative method of infectious disease prevention. Despite the evidence of vaccine effectiveness, there are still individuals who are hesitant about or refuse vaccines. Evidence shows a significant number of vaccine-hesitant individuals are parents of young children. Many factors play a role in parental uncertainty about vaccines, and lack of informed decision making is one that can be addressed by health care workers. Evidence shows that adequate vaccine education and a strong provider recommendation have a significant impact on vaccine uptake. For providers to make a firm recommendation and properly educate families on the benefits, risks, and side effects of vaccines, they must feel confident in their knowledge and communication of the topic. The purpose of this DNP quality improvement project was to increase vaccine knowledge and communication skills of nurses at an immunization clinic of a large health department in southwestern NC. The intervention used was an education session focused on common childhood vaccines and motivational interviewing techniques. Follow-up included assessment of the nurses' communication during vaccine conversations, as well as any identification of perceived barriers to communication. Post-intervention findings revealed 100% of the project participants reported increased vaccine knowledge and increased communication confidence, thus supporting the use of an education session to increase nurses' confidence in vaccine conversations.

Keywords: Vaccines, immunizations, vaccine hesitancy, vaccine refusal, education, education session, communication, informed decision

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Chapter One: Overview of the Problem of Interest

Immunizations are one of the most effective preventative health care methods across the world. Childhood immunizations play a vital role in the health of communities, states, and the nation. Children are a vulnerable population with underdeveloped immune systems; thus, a group that benefits significantly from immunizations. With much controversy and concern surrounding childhood immunizations, parents must learn about the risks and benefits of recommended vaccines. Adequate knowledge renders the parents able to make an informed decision regarding vaccine uptake. Parents place significant trust in healthcare workers to know what is best for their children's health. It is the job of nurses and other health care personnel to be equipped with adequate and accurate knowledge to guide parents in vaccination decision making.

The Center for Disease Control (CDC) and Prevention's Advisory Committee on Immunization Practices (ACIP) develop vaccine recommendations to aid in disease control in the United States (US) (CDC, 2018a). Declination of vaccines and increased prevalence of vaccine-preventable diseases is a growing concern of the United States. Lack of knowledge is a reported parental concern that leads to declination (McKee & Bohannon, 2016). Nurses are a significant resource and influence for parents when deciding to vaccinate their children. Shibli, Rishpon, Cohen-Dar, and Kandlik (2019) found that of the 377 pediatric physicians and nurses working in primary care clinics, 66% expressed interest in participating in training to improve communication skills when serving families who fear or oppose vaccinations. Adequate knowledge and skills of pediatric health care providers and nurses are a vital component of the success of using vaccinations to aid in disease control and prevention.

Background Information

Problem Identification. Knowledge of childhood vaccine benefits, risks, contraindications all contribute to a nurse's comfort in communicating about vaccines. A nurse's confidence level decreases parental anxiety about vaccines. About one-third of the United States' (US) studies on vaccines reveal that among the parents who have concerns about vaccines, approximately less than five percent are anti-vaccination, and a more substantial portion are vaccine-hesitant (Dube, Vivion, & MacDonald, 2015).

Health care workers have a responsibility to implement and ensure the ongoing success of immunization programs by being knowledgeable about and promoting recommended childhood immunizations. McKee & Bohannan (2016) found religious beliefs, safety concerns, personal or philosophical beliefs, and desire for additional education as significant concerns of parents regarding immunizations. When organizations are more conscious of barriers to immunization uptake, they can better understand parental hesitancy and develop strategies to help lessen the uncertainty. McKee & Bohannan (2016) noted barriers to immunization uptake as a lack of access to information and discomfort in speaking with their child's health care provider about immunizations. The parents also reported the desire to have information presented to them from the perspective of providing facts versus attempts to persuade them to vaccinate their children (McKee & Bohannan, 2016).

Philips, Young, Williams, Cooke, and Rickard (2014) examined staff knowledge, opinions, and practices about immunizations. Lack of knowledge about vaccine contraindications, lack of evidence about the measles, mumps, and rubella (MMR) vaccine, and hesitancy to allow multiple injections, were among the reasons patients refused vaccinations. Hagan & Phetlhu (2016) found that adequately informed parents vaccinate their children more

than those that lack knowledge about vaccines. This finding validates that health care providers must be appropriately educated about the benefits and risks of childhood vaccines to have a satisfactory discussion with parents

Problem Description. The knowledge and comfort of health care personnel in communicating about immunizations are critical to the continual local, state, and national efforts to prevent and control infectious and vaccine-preventable diseases. Recent media reports are focusing on a measles outbreak across the United States (US). Unvaccinated individuals are significant contributors to outbreaks across nations (CDC, 2019). As of May 30, 2019, there have been a reported 971 cases of measles reported in the US (CDC, 2019). Vaccines are an effective way to prevent infectious diseases, and proper education on vaccine benefits and risk could aid in increased vaccine uptake within communities.

Phillips et al. (2018) reviewed death records of Australian child deaths from 2005-2014. Of the 73 cases identified, 54 deaths were probable or due to vaccine refusal. Of those 54 deaths, 23 were preventable if vaccines had been administered (Phillips et al., 2018). An article by Freed & Turbitt (2016) found a worldwide estimated 21.8 million infants delinquent on immunizations. Common childhood vaccine-preventable diseases must be discussed often, especially within local community clinics.

One local community clinic (public health department) does not maintain current education about immunization benefits and risks for its staff. Instead, education has focused more on proper technique, giving correct vaccines and its dosage. Assessment of current knowledge about the benefits and risks of standard childhood immunizations is necessary, and nurses must increase their comfort with discussing vaccinations with vaccine-hesitant parents.

In health care, nursing, and the community, prevention of illness is vital and is a frequent topic of interest among community members. Unvaccinated individuals place themselves and others at risk. Due to a lack of information and personal/religious beliefs, some community members fail to uphold the personal responsibility to aid in the prevention of illness in the community. One way that nurses and health care workers can help address those barriers is to equip themselves better to have discussions about immunizations. There is current literature that supports the need for the enhancement of nurses' knowledge of childhood immunizations. Enhancing nurses' confidence in communicating with parents, as well as understanding the role they play in the health of the community, is vital. Nurses must be aware of their knowledge and attitudes toward vaccinations. Nurses are a primary source of information and influence about vaccines for parents and communities.

Significance of Clinical Problem

Parents decide to permit immunizations based on their knowledge. Therefore, there is a need for a periodic review of the nurse's experience with recommended childhood immunizations. Evaluation of nurse's comfort in communicating with parents who are against or indecisive about vaccine administration is also essential. Thus, a quality improvement education program to evaluate the knowledge and communication skills of immunization clinic nurses in a local public health department would prove valuable. This project will empower current staff and could serve as a useful portion of the onboarding process of new employees in the future. Better informed health care providers have more influence on parents deciding to vaccinate.

Immunization goals: Healthy People 2020. There are concerns about the amount of illness, disability, and death caused by infectious diseases. These concerns are present, although research has linked life expectancy to improvements in child survival (HealthyPeople.gov,

2019c). The public health goal of the US is to reduce illness, inpatient stays, and death from communicable and vaccine-preventable diseases (HealthyPeople.gov, 2019c). Childhood immunizations are one of the most effective clinical services that provide a substantial return on investment. According to HealthyPeople.gov (2019c), childhood immunization programs save 33,000 lives, approximately \$10 billion in direct health care cost, and over \$33 billion in indirect cost and prevent 14 million diseases.

Current local practices. Currently, there are no formal routine education programs to educate immunization nurses about childhood immunizations in a local public health department. Additionally, the immunization clinic reports a lack of motivational interviewing training to enhance communication skills within their staff. There are, however, courses offered to the nurses through the organization, but none are focused on immunization knowledge or effective communication with families.

Question Guiding Inquiry (PICO)

A large public health department in urban North Carolina desires to enhance their immunization team's understanding of the childhood vaccines they administer daily. Additionally, the organization is interested in increasing the group's confidence in communication with parents that have concerns about vaccination.

Population. The population of focus is the immunization nursing staff at a local public health department in the southwestern region of North Carolina. The participants include nine nurses, one supervisor, and one health manager.

Intervention. The DNP student implemented a Plan-Do-Study-Act cycle in a local public health department immunization clinic. The beginning phase of the education program included a pre-intervention knowledge assessment. The evaluation determined the nurses' view of their

knowledge of childhood immunization risks and benefits. Other areas evaluated were the nurses' perception of their knowledge level, as well as their perception of their confidence in communicating with families. The staff participated in an educational session and completed a post-intervention survey assessing their knowledge and comfort in communication. The assessments took less than ten minutes to complete. The education session lasted one and one-half hours and took place during a regular staff meeting.

Comparison. There is no current national or state benchmark for the knowledge level of immunization nurses. The site has never assessed its immunization nurses' knowledge level or communication skills. Therefore, the local health department wants to increase knowledge level and communication skills about childhood immunizations by 100% among immunization nurses by the end of this DNP project.

Outcome(s). The immunization nurses will participate in the DNP project education session to enhance their knowledge of common childhood immunization. The session will include information on the risks and benefits of vaccines and motivational interviewing. The nurse will have enhanced communication skills when serving families with concerns regarding vaccine administration. The public health immunization clinic's goal is to have 82% of the clinic nurses report that their knowledge and communication skills were enhanced post-intervention.

Summary

Vaccinations serve as an effective way to help prevent common infectious diseases. Vaccine implementation dates to the 1790s with the eradication of smallpox. During this time, there was a drastic reduction in other infectious diseases such as polio and measles. Even with the knowledge of the critical data surrounding the effectiveness of immunizations, there are still several parental objections to vaccinations. Determining the reasons behind the declinations is an

essential responsibility for health care workers and the community. Although there are multiple reasons why parents refuse to vaccinate their children, a recurrent theme, parental lack of knowledge, once identified, could be quickly resolved. Focused training for nurses is a solution to addressing the lack of education that parents receive either when presenting for immunizations or discussing immunizations in the community.

There is substantial literature that site provider knowledge of and communication about vaccines have a remarkable effect on parental acceptance or refusal of childhood vaccines. Education programs aimed at enhancing nurses' understanding of the risk and benefits of childhood immunizations, would yield nurses more confident and equipped to educate families with concerns. This DNP project aims to help close the knowledge gap and increase the confidence level of local public health immunization clinic nurses in the southwestern region of North Carolina on the recommended childhood immunizations. By ensuring clinic staff is knowledgeable of facts about childhood immunizations, health care organizations could better serve and protect their communities.

Chapter Two: Review of the Literature

A review of scholarly literature is valuable in finding evidence to support an intervention. There is a significant amount of information available on vaccines, barriers to vaccine uptake, and strategies to increase uptake. The literature often describes ineffective communication with healthcare providers (HCPs) and misinformation on vaccine benefits and risks (Ames, Glenton, & Lewin, 2017; Ames et al., 2015; Chan, Leung, Tam, & Lee, 2014; Fournet et al., 2018; Kestenbaum & Feemster, 2015; Shibli, Rishpon, Cohen-Dar, & Kandlik, 2019; Reno et al., 2018). The author has provided a literature synthesis that highlights the impact of healthcare provider communication about vaccines. This synthesis supports the need to assess and increase nurses' knowledge and communication skills to increase parental agreement with vaccines.

Literature Appraisal Methodology

Sampling strategies. Cumulative Index of Nursing and Allied Health Literature (CINAHL) and PubMed search engines were used to review literature. Key terms included provider knowledge, vaccines, immunizations, communication, and education (see Appendix A). The literature search generated five hundred fifty-five articles. After applying filters for time limits, scholarly and peer-reviewed journal articles, English language, nursing, pediatrics, and provider education, 134 relevant articles remained. After a hand search, 26 journal articles remained in support of this project.

The Center for Disease Control and Prevention (CDC), the North Carolina Immunization Branch, and the World Health Organization (WHO) provided useful information. Google Scholar and the National Center for Biotechnology Information (NCBI) provided updated articles on immunizations for ongoing literature review. This review of the literature supplied a

variety of information on vaccine history and effectiveness, MMR controversies, barriers to acceptance of vaccinations, and the health care provider's impact on vaccine uptake.

Evaluation criteria. Inclusion criteria were parental experience, barriers to vaccine uptake, pediatric population, and provider knowledge and communication. Articles excluded included topics focused on provider attitude, school health nurses, and healthcare worker vaccine uptake (see Appendix A). Additional items screened were articles focused on the MMR controversy and vaccine history and safety. There are seven levels of evidence commonly assigned to studies to guide clinical practice (Melnyk, 2016). Levels of evidence are determined based on design, validity, and applicability to patient care. Many articles used in the literature review were a lower level of evidence. The articles included level four evidence from well-designed case-control and cohort studies, level five evidence from systematic reviews of descriptive and qualitative studies, and level six evidence from single descriptive or qualitative studies. However, there were some level one and two evidence included in the reviewed literature.

Literature Review Findings

Most of the reviewed literature used qualitative methods of data collection and analysis (see Appendix B). Systematic reviews, descriptive, and qualitative studies provided the most support for increasing provider knowledge and communication skills to increase vaccine uptake. The literature review indicated the importance of health care providers having adequate knowledge of immunizations and the need to communicate effectively. Effective communication provides parents factual information and tailors conversations to meet family needs. To ensure accurate information on vaccines, health care providers must possess adequate knowledge of immunizations.

Vaccine history and overview. Currently, the project site does not assess the clinic staff's knowledge of immunization risks and benefits. The management team wants to determine

and enhance staff knowledge and improve communication skills for discussions with families. Having an overall understanding of the history, risks, and benefits of immunizations prepares nurses to counter vaccine misinformation.

The first vaccine, smallpox, was introduced over 300 years ago (Plotkin, 2014). Next was the development of the polio vaccine in 1955. As time passed on, researchers developed multiple effective vaccines against other infectious diseases, such as measles, mumps, and varicella (chickenpox) (Plotkin, 2014). Some vaccines provide immunity with a single dose injection, while others, such as hepatitis B, require multiple doses. Some vaccines, such as the tetanus vaccine, may lose effectiveness over time and require boosters. Inactivated vaccines may contain artificial adjuvants, such as aluminum, to stimulate the immune system (Plotkin, 2014).

Adjuvants work to increase the immune response of vaccines and have been used safely for over 70 years. Most vaccines manufactured today contain adjuvants and a small portion of a virus or bacteria, such as a protein (CDC, 2018b). Whereas, other vaccines are made from weakened or killed germs, contain naturally occurring adjuvants, which help to produce a more intense immune response (CDC, 2018b). Adjuvanted vaccines cause more local and systemic reactions such as redness and swelling at the site of injection with fever, chills, and body aches than non-adjuvanted vaccines (CDC, 2018b). Knowledge about adjuvants in vaccines is essential information for health care workers when encountering a parent concerned about vaccine components.

Benefits. The leading benefit that vaccines provide is protection against infectious diseases. Vaccines expose the immune system to an artificial version of an infectious disease; thus, no need to acquire natural immunity (National Institute of Allergy and Infectious Disease [NIAID], 2014). When an individual contracts an illness and the body's immune system

develops antibodies to the disease, natural immunity is acquired. The associated dangers with naturally acquired resistance are a risk for complications, transmission to others, and possible death (NIAID, 2014). Immunizations stimulate the immune system to recognize specific diseases, which causes the body to build immunity to deter future illnesses.

Vaccine administration decreases health care costs, which is another benefit. NIAID (2014) reports for every dollar spent in US immunization programs, there is a five-dollar decrease in indirect costs, such as medications, treatments, sick visits, and hospitalizations. Additional expenses, such as lost wages and reduced company profits, is reduced by eleven dollars. Adequate vaccine uptake benefits communities by providing herd immunity.

Herd immunity is “the immunization of large portions of the population to protect the unvaccinated, immunocompromised, and immunologically naïve by reducing the number of susceptible hosts to a level less than the threshold needed for transmission” (Mallory, Lindesmith, & Baric, 2018, p. 64). Scientists can use epidemiology to predict disease-specific vaccination coverage needed to protect unvaccinated people during outbreaks. Disease contagiousness is the chief factor used to determine how many people need to be vaccinated to achieve herd immunity (Mallory et al., 2018). Herd immunity provides a chance to avoid illness for individuals with contraindications to vaccines or those who refuse. However, depending on the disease and the vaccinated community members, the effectiveness of herd immunity can decline over time (Mallory et al., 2018).

Adverse reactions. Vaccines produce active immunity against infectious diseases; however, chemicals introduced into the body may elicit adverse reactions. Mild reactions include pain, redness, or tenderness at the injection site, fatigue, headache, and fever. The most severe reaction is anaphylaxis (Kroger, Duchin, & Vázquez, 2017). The CDC provides guidelines to

prevent and manage adverse reactions to vaccines. Health care providers have access to CDC adverse reaction guidelines on their website. The Advisory Committee on Immunization Practice's guidelines describes how to discuss risks associated with egg allergy, prevent adverse reactions, and manage acute vaccine reactions.

Vaccine hesitancy. The decision to vaccinate a child is one of the first vital health decisions parents encounter following birth. However, not all parents feel equipped to make that decision. Individuals who hold varying degrees of indecision and those who delay or refuse vaccines are considered vaccine-hesitant (Herath et al., 2018; MacDonald, Butler, & Dube, 2018; Reno et al., 2018). There are multiple studies on vaccine hesitancy. Results indicate that provider knowledge, communication, and recommendation are primary ways to influence vaccine acceptance (Ames et al., 2017; Chan et al., 2014; Delkhosh, Negarandeh, Ghasemi, & Rostami, 2014; Kestenbaum & Feemster, 2015; Lehmann, de Melker, Timmermans, & Mollema, 2017). When nurses appropriately address their concerns, some vaccine-hesitant parents will consent to vaccination.

Vaccine resistance. Resistance to vaccines in the US dates to the 1850s when controversy arose over smallpox vaccine mandates (Kestenbaum & Feemster, 2015). Anti-vaccine movements have caused confusion and debate about immunization safety. Anti-vaccine groups frequently have a strong social media presence and well-developed websites, attracting people to their cause (Evrony & Caplan, 2017). A survey of US vaccine information revealed that when searching "vaccination" on the internet, 71% of the top ten results are anti-vaccine related. (Davis, 2019). Of these, 100% linked vaccines to illnesses of unknown origin such as autism and sudden infant death syndrome (Davis, 2019). Anti-vaccine groups are strategic in providing incomplete information, which stirs up confusion (Evrony & Caplan, 2017).

Many studies categorize patients based on varying degrees of acceptance or resistance to vaccines. Kestenbaum and Feemster (2015) identified resistant attitudes as (1) those convinced of benefits of vaccines, (2) those emotionally invested in their children yet cautious about vaccines, (3) those who are more skeptical of vaccines, and (4) those who are distrustful of vaccines and vaccination policies. An additional study describes parental attitudes as (1) the unquestioning acceptor, (2) the cautious acceptor, (3) the hesitant acceptor, (4) the late or selective vaccinator, and (5) the refuser (Forbes, McMinn, Crawford, Leask, & Danchin, 2015). Those that refuse vaccines are at risk for vaccine-preventable diseases and dangers to societal health. Regardless of the reason for hesitancy or the level of acceptance, nurses have a responsibility to engage families in discussions about vaccines.

Barriers to immunization uptake. Studies suggest an association between immunization acceptance with provider communication and recommendation. Interventions to enhance provider communication fill gaps in parental knowledge about childhood immunizations. Herath et al. (2018), found that 46% of parents visiting a routine clinic in Sri Lanka had below-average immunizations knowledge. “Being unsure of the effects of the vaccine” was the top reason parents were hesitant to vaccinate their children against varicella (Chan et al., 2014, p. 996).

Safety concerns. Concerns about immunization safety affect parental acceptance. Parental safety concerns vary from linkage to autism, serious adverse events, inadequate testing or research, or toxic components of vaccines (Danchin & Nolan, 2014). According to Danchin and Nolan (2014), parental fear that immunizations weaken a child’s immune system, have undesired side effects, and possibly be ineffective were other concerns. Chan et al. (2014) found that ineffectiveness and fear of adverse side-effects were parental safety concerns. My, Danchin,

Willaby, Pemberton, & Leask (2017) surveyed 1324 Australians and found that 90% believed vaccines were safe; however, 23% had concerns of inadequate safety testing. Additionally, 21 % believed false data that linked vaccines to autism (My et al., 2017). Finally, 22% expressed concerns that vaccines weakened their children's immune systems (My et al., 2017).

Media and other information sources. Parental exposure to negative and false information about immunization contributes to decreased immunization uptake. Parental concerns about vaccine safety develop from media coverage, social media, health professionals, and other parents (Allan & Harden, 2015; Ames et al., 2017; Johnson & Capdevila, 2014). For example, despite a disproved claim linking vaccines to autism, parents reported lingering memories from 1998 media coverage (Johnson & Capdevila, 2014). Chung, Schamel, Fisher, and Frew (2017) surveyed 5,121 parents of varying levels of vaccine acceptance that listed multiple, influencing sources. During the study, parents reported vaccine information sources as doctors and other HCPs, family and friends, media sources, and celebrity or public figures (Chung, Schamel, Fisher, & Frew, 2017). Parents ranked doctors and nurses as the top trusted source for vaccine information and ranked family and media sources as the second and third choices. Given that social media is one of the top three trusted sources of vaccine information, the likelihood of parents making vaccine decisions on non-factual and biased information increases.

MMR controversy. Vaccine linkage to autism and developmental concerns is one of the most debated topics in recent years. In 1998, Andrew Wakefield published an article in the Lancet linking the MMR vaccine to increased risk for autism and inflammatory bowel disease in children (Napier, Lee, Robertson, Lawson, & Pollock, 2016). Although the MMR controversy began over two decades ago, MMR vaccine uptake did not reach pre-Wakefield article rates until

2012 (Allan & Harden, 2015). Despite MMR vaccine effectiveness, measles, mumps, and rubella continue to resurface in the US (CDC, 2019). During outbreaks, concerned citizens often fault the unvaccinated population for the public health crisis. Health care providers can prevent future outbreaks through the promotion of immunizations when education focuses on parental concerns with factual data, vaccine uptake increases (Bowling, 2018). Individual conversations, community outreach, and lobbying are all ways to enhance parental education and vaccine promotion from providers.

Strategies/barriers to address barriers to vaccine acceptance. The most frequently used effective strategy to address barriers to vaccine uptake was provider communication and influence. Chung et al. (2017) found that relationship and trust between provider and parent positively impacted parental attitude toward immunizations. Most study participants, either hesitant or resistant reported that a health care provider helped them accept vaccinations for their child (Ames et al., 2017; Chan et al., 2014; Delkhosh et al., 2014; Kestenbaum & Feemster, 2015; Lehmann et al., 2017). Vaccine acceptors reported that provider recommendation and effective communication influenced decisions to permit immunizations. Strategic communication efforts, such as motivational interviewing, affords providers the skills to enhance communication and build trust.

Communication techniques. Motivational interviewing (MI) skills promote behavioral changes. MI techniques use a guiding style of communication that increases collaboration and supports autonomy (Reno et al., 2018). Using promotion directed language, i.e. “these are the recommended vaccines for your child today, what questions and concerns do you have,” is an effective form of motivational interviewing. This approach allows providers to recommend vaccines while engaging parents in a compassionate, collaborative conversation that helps

decision making. Reno et al. (2018) observed that providers found MI was a useful tool to address parental concerns, mainly when parents reported intent to refuse vaccines. Gagneur, Gosselin, and Dube (2018) developed an MI program targeting vaccine-hesitant parents during hospital post-partum stays. The strategy discussed (1) vaccine-preventable diseases targeted by the first vaccine series, (2) effectiveness, (3) importance of the schedule, (4) concerns and fears, and (5) organization of vaccine services (Gagneur, Gosselin, & Dube, 2018). This program resulted in a 15% increase of intention to vaccinate at the two-month visit and in a 40% decrease in vaccine hesitancy (Gagneur et al., 2018).

Assessing and addressing parental concerns. Frequently, vaccine results from parental concerns. Assessment of parental concerns helps to address barriers to vaccines. Chung et al. (2017), found that 52% of parents reported refusing vaccines because they knew a “friend” whose child had experienced a severe vaccine reaction. Additionally, 47% described a personal negative experience, and 36% stated they had experienced adverse reactions to vaccinations (Chung et al., 2017). Assessing concerns of parents creates opportunities to tailor discussions to parental needs. When anxieties are about safety, nurses can use data from governmental agencies to reassure parents.

Promoting safety and efficacy. Governmental agencies, such as the World Health Organization (WHO), oversee procedures and global standards to assess the quality, safety, and immunogenicity of vaccines (WHO, 2019). The CDC implemented a vaccine safety program to monitor vaccine safety in the United States. The CDC give consumers valuable information about common safety concerns. CDC website topics include an overview of vaccine adjuvants, thimerosal, Guillain-Barre Syndrome, autism, sudden infant death syndrome (SIDS), and more

(CDC, 2016). Nurses can adequately address vaccine safety concerns through education and by directing parents to appropriate resources for additional information.

Additionally, parents must receive accurate information about a vaccine's protective factors. Vaccine administration has averted two to three million deaths per year from infectious diseases (WHO, 2019). WHO (2018) reported that immunization uptake rates stabilized at about 85% over the past few years. Improvement of global immunization rates could prevent an additional 1.5 million deaths (WHO, 2018).

Enhance knowledge and communication skills. Substantial evidence supports that health care providers are essential vaccine acceptance promoters and significant vaccine uptake predictor (Ames et al., 2017; Ames et al., 2015; Chan et al., 2014; Fournet et al., 2018; Kestenbaum & Feemster, 2015; Shibli et al., 2019; Reno et al., 2018). The literature indicates that health care providers must be prepared for vaccine discussions with parents and be able to address their questions and concerns. The childhood immunization schedule is routinely updated; thus, providers must remain current in knowledge (Kestenbaum & Feemster, 2015).

Wade (2014) suggested that relationship building with parents is more important than vaccine information. Nurses can use motivational interviewing techniques such as open-ended questions and active listening to elicit information, provide responses, and gain parental trust (Reno et al., 2018). Before administering vaccines, assess and address parental concerns, inquire about past experiences with vaccines, screen for contraindications, and obtain consent (Wade, 2014). One practical approach to vaccine conversations is to address parental concerns, share data-supported information, and dispel any myths about vaccines (Bowling, 2018).

Knowledge of medical and religious exemptions is important for health care providers to understand. In all 50 states, public school systems mandate that children have updated immunizations before starting school (Bowling, 2018). Families use medical and religious exemptions to avoid expulsion from school secondary to non-adherence to immunization mandates. Nurses must know what constitutes a medical exemption and be non-judgmental toward families who request a religious exemption.

Limitations of the Literature Review Process

Many articles focused on communication about human papillomavirus (HPV) and MMR vaccines. When searching solely for items focused on provider communication about vaccines, HPV dominated search results. Lack of literature that focused on strategies to improve provider knowledge and communication on immunizations was another limitation. Articles discussed general provider knowledge, communication, and the impact on healthcare outcomes. Thus, there is a need for more research on provider immunization knowledge strategies that promote changes during vaccine conversations. Additionally, using the key search terms, the literature review did not yield articles focusing on immunization knowledge in the public health setting using the key search terms.

Limited literature exists on educational sessions for providers geared toward immunization knowledge. Henrikson et al. (2015) conducted a randomized trial to determine if physician-targeted communication training would reduce maternal vaccine hesitancy or improve physician self-efficacy. The authors found insignificant evidence of hesitancy reduction. The study did, however, indicate exploration of provider education and effective communication strategies are needed to reduce parental vaccine hesitancy. Lastly, there were many articles published outside the US found in the literature search.

Discussion

Conclusion of findings. Based on the review of literature, vaccines are a vital intervention to protect public health and prevent infectious diseases. Multiple studies focused on resistance to immunizations and strategies to improve uptake. Many studies categorized parents as non-hesitant or unquestioning acceptors, hesitant, cautious or partial acceptors, delayers, and refusers or decliners (Chung et al., 2017; Forbes et al., 2015; Lehmann et al., 2017). Parental lack of knowledge, parental concerns for safety, and negative influence by media or personal sources all contribute to resistance to immunizations (Allan & Harden, 2015; Bowling, 2018; Chan et al., 2014; Chung et al., 2017; My et al., 2017; Danchin & Nolan, 2014; Herath et al., 2018; Johnson & Capdevila, 2014).

The MMR vaccine received negative attention resulting from a poorly conducted research study. The study linked the MMR vaccine to autism and inflammatory bowel disease in children (Allan & Harden, 2014; Johnson & Capdevila, 2014; McHale, Keenan, & Ghebrehewet, 2016). *The Lancet* later retracted the article. The editors noted problematic methods (The Editors of *The Lancet*, 2010). Other studies have been published refuting the article's claims, however, due to the over-publicization of the topic, many parents today are still influenced by the myth (Jain et al., 2015; Taylor, L., Swerdfeger, & Eslick, 2014). To provide factual data and information to concerned parents, nurses can use governmental agencies such as the CDC and WHO as valuable resources for vaccine information. These agencies offer essential information on the history, safety, and effectiveness of vaccines.

Trusted relationships with health care providers and provider recommendations are influencers to acceptance or refusal of immunizations (Ames et al., 2017; Ames et al., 2015; Fournet et al., 2018; Shibli et al., 2019; Reno et al., 2018). Health care providers empower

parents to make informed decisions regarding vaccine uptake. Providers must have current knowledge and practice effective communication skills during vaccine conversations. Using motivational interviewing, a provider can influence parents by, remaining objective, maintaining respect and empathy, and providing space for parents to discuss concerns without judgment.

Advantages and disadvantages of findings. Enhancement of health care provider's communication skills and knowledge of immunizations positively impacts the prevention of infectious disease. Evidence from the literature indicates a positive relationship between provider message and immunization acceptance. Assessment of knowledge and communication skills helps organizations identify gaps in service and develop effective interventions to increase vaccine uptake.

The literature identified social media, radio, celebrity champions, and storytelling as alternatives or additions to provider recommendation; however, the effectiveness of these interventions is not well supported (Herath et al., 2018; Johnson & Capdevila, 2014; Kestenbaum & Feemster, 2015; Wade, 2014). Glanz, Kraus, and Daley (2015) suggested that vaccine messages via a social media app (during pregnancy) can influence maternal vaccine behaviors. The literature did not reveal any disadvantages to enhancing provider's knowledge and communication skills surrounding immunizations. In contrast, multiple articles noted effective communication and recommendation from providers as a valuable intervention to promote vaccine acceptance (Ames et al., 2017; Chan et al., 2014; Delkhosh et al., 2014; Kestenbaum, & Feemster, 2015; Lehmann et al., 2017). Therefore, ensuring providers possess current and factual knowledge of immunizations as well as appropriate communication skills, is vital to the prevention of vaccine-preventable disease.

Utilization of findings in practice change. The implementation phase of the project included assessment of staff's knowledge of benefits and risks of standard childhood immunizations as well as the staff's perception of their communication skills. The clinic staff participated in an education session that provided an overview of the benefits and risks of routine childhood/adolescent vaccines. To enhance communication, the nurses were presented with common vaccine communication scenarios and given a chance to practice responses. Hsu, Huang, and Hsieh (2014) found scenario-based communication training to be more effective than case-based training in enhancing providers' competence and self-efficacy. In scenario-based communication training, the participants viewed DVDs of real-life communication scenarios and were allowed to discuss the videos as a group (Hsu et al., 2014). In the case-based communication training, trainers provided participants with a case scenario, then allowed for group discussion, reflection, and feedback (Hsu et al., 2014). The project education covered ways to engage parents in vaccine conversations, build rapport, and empower the parent as the child's best advocate. The session focused on the promotion of practice change to move toward discussing immunizations in terms of individual and community protection versus vaccines as requirements for school entry. The culmination of implementation included an online survey post-session determining if the staff report enhanced knowledge and communication skills. The motivational interviewing skills reviewed in the information session provided the staff with more effective communication techniques to use during vaccine conversations. The clinic staff can use MI techniques to help parents make vaccine decisions. Conversations using MI will prompt discussion and questions from parents versus be one-sided, directive, and prescriptive (Gagneur et al., 2018).

The intervention proposed is well supported by the literature. Regular assessment of health care providers' knowledge and communication skills to promote competence and self-efficacy are necessary for continued competency (Ramoo, Abdullah, Tan, Wong, & Chua, 2016). Regular assessments of knowledge can alert program managers when refreshers are needed (Ramoo et al., 2016). Health care providers can gain significant knowledge and greater awareness when participating in educational interventions. Routine changes to vaccine recommendations and the possibility of declining expertise and skills are good reasons organizations must invest in building the confidence and skills of nurses.

Summary

The education intervention in the local health department's immunization clinic informed managers and directors if there was a need for initial and ongoing assessment of staff's knowledge and communication skills surrounding immunizations. Assessing the clinic nurses' knowledge and communication skills will aid in meeting the Healthy People 2020's goal to increase immunization rates and reduce preventable diseases. The aim of this project is in alignment with the Institute for Healthcare Improvement's (IHI) triple aim framework. It could be used by the organization to implement a triple aim initiative in the immunization clinic fully. Improving nurses' knowledge and communication will enhance the patient experience. Improved relationships between nurses and families and parental feelings of empowerment to make informed decisions about care contribute to improved patient experiences (Institute for Healthcare Improvement [IHI], 2019). Effective provider communication and recommendation is a strong predictor of vaccine uptake (Kestenbaum, & Feemster, 2015). Increased vaccine uptake creates a snowball effect of improved health of the population and healthcare cost reduction.

The review of the literature revealed themes consistent with the positive impact of provider immunization knowledge and communication on vaccine uptake. Research supports a need for an improvement in healthcare provider knowledge and discussion about immunizations. Enhanced understanding will prepare health care providers to effectively educate and address the concerns of the public during these “possible exposure clinics.” Nurses will be able to implement sound communication practices when serving in the clinic, as well as in the community. Providing nurses with primary education and tools during onboarding and on an ongoing basis will better prepare them for vaccine conversations.

Chapter Three: Theory and Concept Model for Evidence-based Practice

Using the framework of the self-determination theory (SDT), this DNP project will work to motivate immunization clinic nurses to have more effective communication with parents. When a person actualizes competence, feels a connection to their work performance, and has a sense of personal responsibility, they will be more motivated to carry out assigned tasks. Effective communication from the clinic nurses will provide parents with adequate knowledge, confidence, and a sense of responsibility for the health of their child and the community. The SDT will compel parents to feel more competent in making decisions about vaccine uptake. Parents will feel a greater sense of connectedness to a community of individuals invested in the prevention of infectious disease.

Knowledge of key terms and tools utilized in the DNP project is instrumental to adequately learning the impression of the project. This DNP project will use the evidence-based change model, the PDSA, to implement an education session that will promote self-determined motivation and engagement.

Concept Analysis

- **Barriers:** a thought or object that prohibits a person from proceeding with an action. Some barriers to care include costs, inadequate health literacy, access, demographic location, and cultural or ethnic beliefs (HealthyPeople.gov, 2019a).
- **Benefit:** a gain from a person, thing, or concept. Things that benefit an individual, provide protection, and give a sense of safety (NIAID, 2014).
- **Communication:** the act of giving or receiving information. Effective communication can positively impact one's understanding of a subject and influence decisions (HealthyPeople.gov, 2019b).

- **Competence:** a state of being competent or knowledgeable or the ability to correctly and successfully perform an act. Competence is acquired through experience and learning and influenced by motivation and attitude (Fukada, 2018).
- **Efficacy:** the extent to which an intervention or treatment produces the desired outcome (Schutter, 2017).
- **Effectiveness:** the degree of a beneficial effect of an intervention or treatment (Schutter, 2017).
- **Health care provider:** a licensed health care worker that provides health care services (MedlinePlus.gov, 2019). There are many disciplines categorized as health care providers. Doctors, nurses, nurse practitioners, therapists, and pharmacists are all considered health care providers.
- **Hesitancy:** an uneasy feeling one has about a person, item, or situation. Hesitant individuals are indecisive about agreeance, acceptance, or uptake of a given product, or idea (Dube et al., 2015).
- **Knowledge:** an awareness of facts, information, or skill that one possesses through formal education, day to day interactions, and experiences (Herath et al., 2018). People express understanding when they know a subject.
- **Prevention:** the act of preventing something from happening. Prevention seeks to reduce risk and increase protective factors (National Cancer Institute, n.d.). Immunizations are considered primary prevention, aimed to prevent diseases from occurring. Secondary prevention is actions aimed to identify diseases and conditions in their first stages to initiate early treatment and management (CDC, n.d.). Tertiary prevention's goal is to slow or stop the progression of a disease or condition after diagnosis (CDC, n.d.).

- **Safety:** protection from adverse reactions, risk, or injury. Testing a product or intervention for its ability to yield the desired outcome without an unfavorable response, threat, or damage, produces a sense of safety (NIAID, 2014).
- **Vaccines/immunizations:** injections, oral or nasal products used to produce immunity in individuals (CDC, 2018c). Vaccines provide resistance through stimulation of the immune system, yielding protection from diseases (CDC, 2018c). People commonly interchange the terms vaccine and immunization. Immunization is the process of vaccination (CDC, 2018c). For this project, the terms vaccines and immunizations were used interchangeably to reflect the products used to provide immunity. For this project, the term immunization clinic identifies the clinic at the project site.
- **Project Outcome:** use of an education session focused on standard childhood immunizations and motivational interviewing to enhance the knowledge and communication skills of the immunization clinic nurses. The education session will provide the nurses with tools and information to improve communication with parents seeking guidance on immunizations.

Theoretical Framework

Founded by Edward Deci and Richard Ryan, the self-determination theory is an approach to personality, human motivation, and optimal functioning. Optimal wellness and performance influence the sense that one's basic psychological needs are being (Brainwaves Video Anthology, 2017). The founders believe humans have three basic psychological needs, (a) autonomy, (b) competence, and (c) relatedness (Self-Determination Theory, 2019; Ryan & Deci, 2000). These needs are essential to self-motivation and personality integration. Autonomy is a perception of being responsible and being a master of one's destiny. Competence is critical to

wellness and meets the need for achievement, knowledge, and skills. Relatedness is a person's innate need to belong, feel connected, care for others, and matter to others.

The SDT suggests that there are two types of motivation-intrinsic and extrinsic. Intrinsic motivation comes from within and is stimulating and enjoyable (Brainwaves Video Anthology, 2017). Interests, curiosity, and abiding values are considered intrinsic motivators. External sources such as rewards, grades, and opinions of others influence extrinsic motivation (Brainwaves Video Anthology, 2017; Self-Determination Theory, 2019). Deci and Ryan believe people can internalize extrinsic motivation as their own by identifying the value of the task and integrating it into their values (Brainwaves Video Anthology, 2017). The SDT distinguishes between autonomous and controlled motivation. Autonomous motivation comes from internal sources but can encompass motivation from external sources if the individual has aligned an activity's value with their sense of self (Positive Psychology Program, 2019). Fear of shame, approval-seeking, and protection of the ego stimulate controlled motivation (Positive Psychology Program, 2019). Controlled motivation is partially internalized and managed by external regulation (Positive Psychology Program, 2019).

The SDT encompasses six mini-theories that each address one facet of motivation or personality functioning. Cognitive evaluation theory (CET) focuses on intrinsic motivation, specifically how intrinsic factors impact motivation and interest (Self-Determination Theory, 2019). The organismic integration theory (OIT) addresses extrinsic motivation and its subtypes: external regulation, introjection, identification, and integration (Self-Determination Theory, 2019). The OIT subtypes follow a continuum of internalization. The OIT mini-theory suggests, the greater the internalization, the greater autonomy displayed while enacting behaviors (Self-Determination Theory, 2019). The causality orientations theory (COT) focuses on an

individual's orientation toward environments and the factors guiding the orientation. COT highlights three types of causality orientations, (a) the autonomy orientation which results from interest and value in the task, (b) the control orientation which focuses on rewards, gains, and approval; and (c) the impersonal or amotivated orientation determined by anxiety about personal competence (Self-Determination Theory, 2019). The basic psychological needs theory (BPNT) focuses on psychological needs and their relation to health and well-being (Self-Determination Theory, 2019). The goal contents theory (GCT) elaborates on the distinctions between intrinsic and extrinsic goals, and how they impact motivation and wellness. The final mini-theory, the relationship motivation theory (RMT), is concerned with desire and the need for close personal relationships and how these relationships impact adjustment and well-being (Self-Determination Theory, 2019).

Application to practice. An individual or group can use the self-determination theory in multiple ways to make or accept change. Miller, Hillier, Russ, Luercio, & Win (2019) applied the self-determination theory to the redesign of an intermediate care unit (IMCU) inpatient care team. The goal of redesigning the care teams was to increase continuity among providers and to increase support for second-year supervising residents. Areas specifically targeted using SDT were team structure, call schedule, rotation length, and rounding structure (Miller et al., 2019). The intervention group consisted of second-year postgraduate residents who supervised the IMCU after the redesign. Third-year postgraduate residents who had overseen the IMCU before the redesign were the comparison group. Miller et al. (2019) found that the intervention group reported a greater sense of relatedness and autonomy compared to the comparison group. The SDT guided intervention was successful in meeting the two of the basic psychological needs (autonomy and relatedness) of the second-year residents.

Murray et al. (2015) utilized a communications skills training program, grounded in the SDT, to enhance physiotherapists' support of patients' psychological needs. The study was a randomized control trial (RCT) with an intervention and a control group. The intervention group consisted of physiotherapists who received SDT-based communication skills training. The control group had no communication training. The patients involved were aware of the purpose of the study, but unaware whether their therapist had received the training. Data were collected over eight months. Murray et al. (2015) found the patients treated by a physiotherapist in the intervention group reported an increased level of support for their needs than their counterparts treated by the control group. Murray et al.'s (2015) research support the intent of this DNP project to use communication training to enhance nurses' communication skills.

The SDT adequately supports the DNP project, as the project's intervention aimed to motivate participants. The goal of the project was to enhance the immunization clinic nurse's vaccine knowledge and communication skills. The DNP project influenced a sense of connectedness by implementing a practice change amongst all staff members. The leadership team's participation reinforced a sense of connectedness. Nurses felt supported by each other and the leadership team. The entire team used the knowledge and skills gained to improve communication with families.

The education session provided immunization education and communication strategies, with consideration of the possible intrinsic and extrinsic motivators of the participants. The session aimed to motivate participants to utilize the information learned to develop effective communication strategies. By developing strategies and scripts, the clinic nurses developed a sense of autonomy and competence. Relatedness evolved through the collaborative efforts of the team during partner and group exercises. The outcome of the education session increased the

nurse's levels of self-determined motivation, persistence, creativity, and engagement (see Figure 3.1) (Hancox, Quested, Ntoumanis, & Thøgersen-Ntoumani, 2018). The education session met the nurses' need for autonomy, competence, and relatedness; therefore, the nurses were motivated to adopt assigned tasks as ones of personal value. The clinic nurses were self-motivated to provide effective immunization conversations by operationalizing the communication strategies learned from the education session (Hancox et al., 2018). Feeling their basic psychological needs were met, the nurses placed increased value on vaccine conversations (Brainwaves Video Anthology, 2017; Self-Determination Theory, 2019). Parents who received services developed an increase in self-determined motivation and engagement. The newly learned motivational strategies utilized by the clinic nurses enhanced parental vaccine knowledge. Parents, in turn, developed a greater sense of autonomy to make an informed decision. Parental responsibility for the health of the community improved, and acceptors of vaccines have an increased sense of connectedness to promoters of vaccines.

Figure 3.1. Application of the Self-Determination Theory to Promote Enhanced Communication

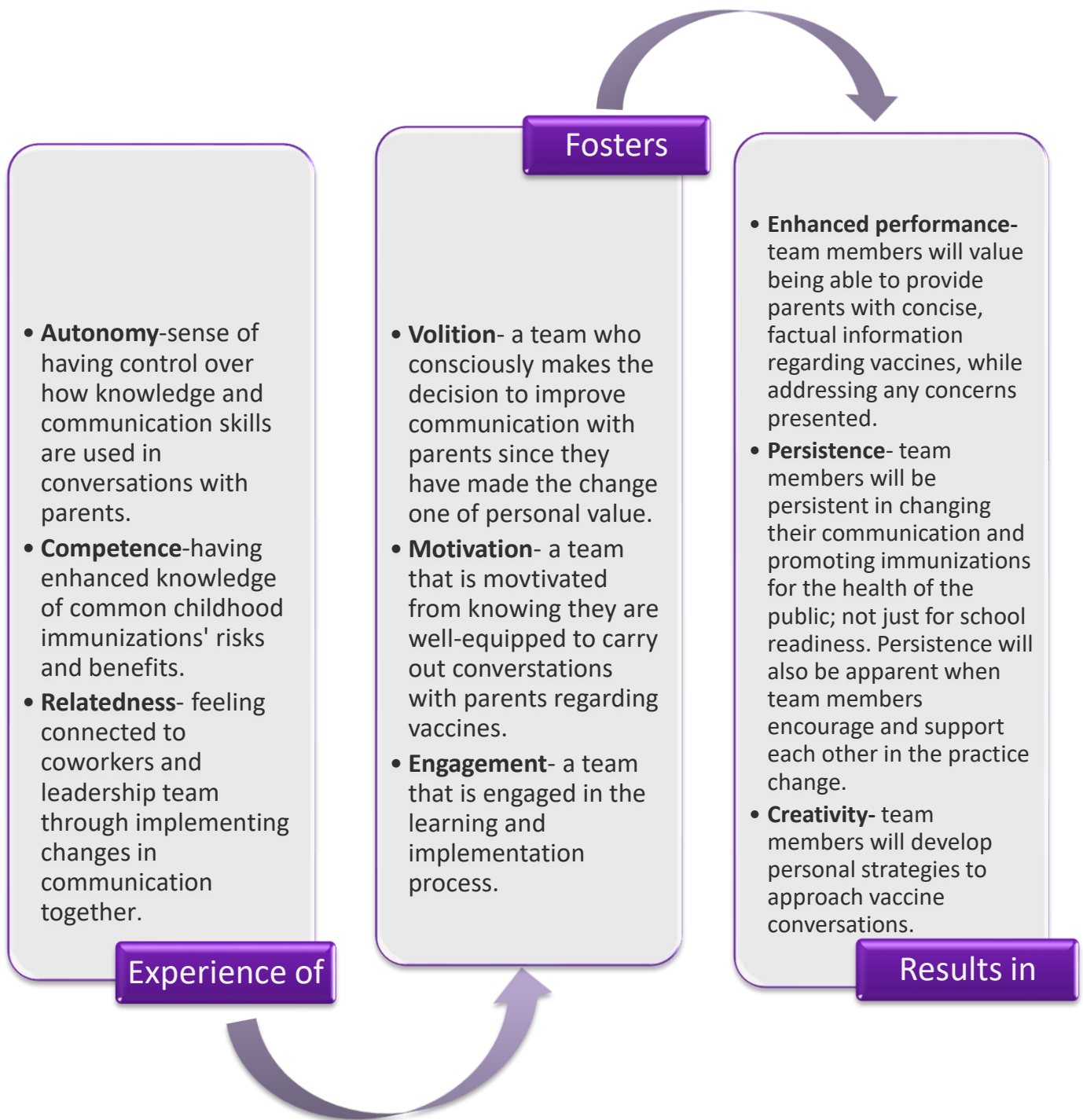


Figure 3.1. Application of the Self-Determination Theory to Promote Enhanced Communication. This figure is a depiction of the self-determination theory applied to a DNP project aimed to enhance communication skills and knowledge of immunization clinic nurses.

Evidenced-Based Change Model

PDSA Cycle. In the 1920s, Walter Shewhart developed the plan-do-check-act (PDCA) model, a continuous quality improvement (QI) process to design, test, and evaluate interventions (Butts & Rich, 2015; M. J. Taylor, M. et al., 2017). W. E. Deming later adapted the model, modifying the plan-do-study-act (PDSA) to focus more on studying the process by identifying lessons learned and if the improvement met expectations (Butts & Rich, 2015; M. J. Taylor, M. et al., 2017). The model evaluates change and accelerates QI. The rapid cycle of the PDSA systematically implements change, review outcomes, and act upon information obtained (Butts & Rich, 2015; Christoff, 2018; IHI, 2019; Cleary, 2015; M. J. Taylor, M. et al., 2017). Health care organizations frequently use PDSAs (Coury et al., 2017). The PDSA cycle uses a four-step process to determine the presence of change.

Plan. The “plan” stage of the PDSA cycle is a designated time for identification and prioritization of opportunities for improvement and clearly defining the problem (Bennett, Kinney, & Mattachione, 2015). The identification of the location, tasks, participants, and method of implementation takes place during the planning phase (Christoff, 2018). The formulation of the objectives and outcome is a part of the planning phase (Christoff, 2018).

Do. The “Do” stage is the implementation stage of the process. The defined intervention or process change is implemented, and data is collected, identifying the successes, issues, or unexpected outcomes (Christoff, 2018; Bennett et al., 2015).

Study. During the “study” stage, data analysis determines the impact of the intervention (Christoff, 2018; Bennett et al., 2015). A comparison is made between the outcome and the previous results as well as compared to the predicted outcomes (Christoff, 2018; Bennett et al., 2015).

Act. In the final stage, one must reflect on lessons learned, make decisions about adopting the intervention, and determine necessary changes (Bennett et al., 2015). This stage prompts organizers to determine if the plan and intervention were successful, identify adaptations needed, and decide how to move forward. If a change was not accomplished or not accomplished at the level intended, implantation of the next PDSA cycle is necessary. The continuous nature of the PDSA cycle allows for incorporating lessons learned and opportunities for improvement from the previous cycle.

Application to practice change. This DNP project offered focused attention on the clinic nurse's knowledge and communication of immunizations. The project site did not have a process in place to assess or enhance immunization clinic staff's knowledge and communication skills. The PDSA cycle was useful in implementing the education session and determining the success of the intervention (see Figure 3.2). During the planning stage of the PDSA, enhancing knowledge and communication of the immunization nurses was identified as the priority. The DNP student identified the project site, participants, and chose the intervention. The intervention was an education session designed to provide information about common childhood immunizations. The education session included tips and strategies for effective communication, specifically, motivational interviewing. The initial step in the "do" stage of the project was to conduct a pre-intervention knowledge assessment. The clinic staff completed an online survey to determine knowledge of routine childhood immunization and approaches to communication with parents. The education session provided simple facts about childhood immunization and tips and strategies for communication. The education session took place during a staff meeting. Three immunization nurses, one interpreter, the director of nursing, and two school health supervisors participated in the education session. Two additional nurses received individual education

sessions at later dates. Post-intervention data were collected via online surveys to determine if the intervention was successful. The “study” stage included the evaluation of the project’s measurable outcomes. Success was determined based on the staff’s self-report of increased knowledge and communication skills surrounding immunizations. When the desired plan was not actualized, revising the PDSA cycle was necessary.

The PDSA is a continuous model that utilizes data to either standardize the proposed change, suggest adjustments and repeat the cycle, or abandon the change (Bennett et al., 2015). Using a PDSA model to improve knowledge and communication was an effective way to test change and optimize services in the immunization clinic. The model was used to determine if an education session can effectively enhance nurses’ knowledge and communication skills. After the project implementation, the intervention was deemed successful; therefore, the project site could adopt all or parts of the intervention for future use. If the education session were not as effective as initially hypothesized, a subsequent PDSA cycle would ensue to make improvements to the current education session or find a more effective intervention.

Figure 3.2. PDSA Cycle: Enhancing Knowledge and Communication

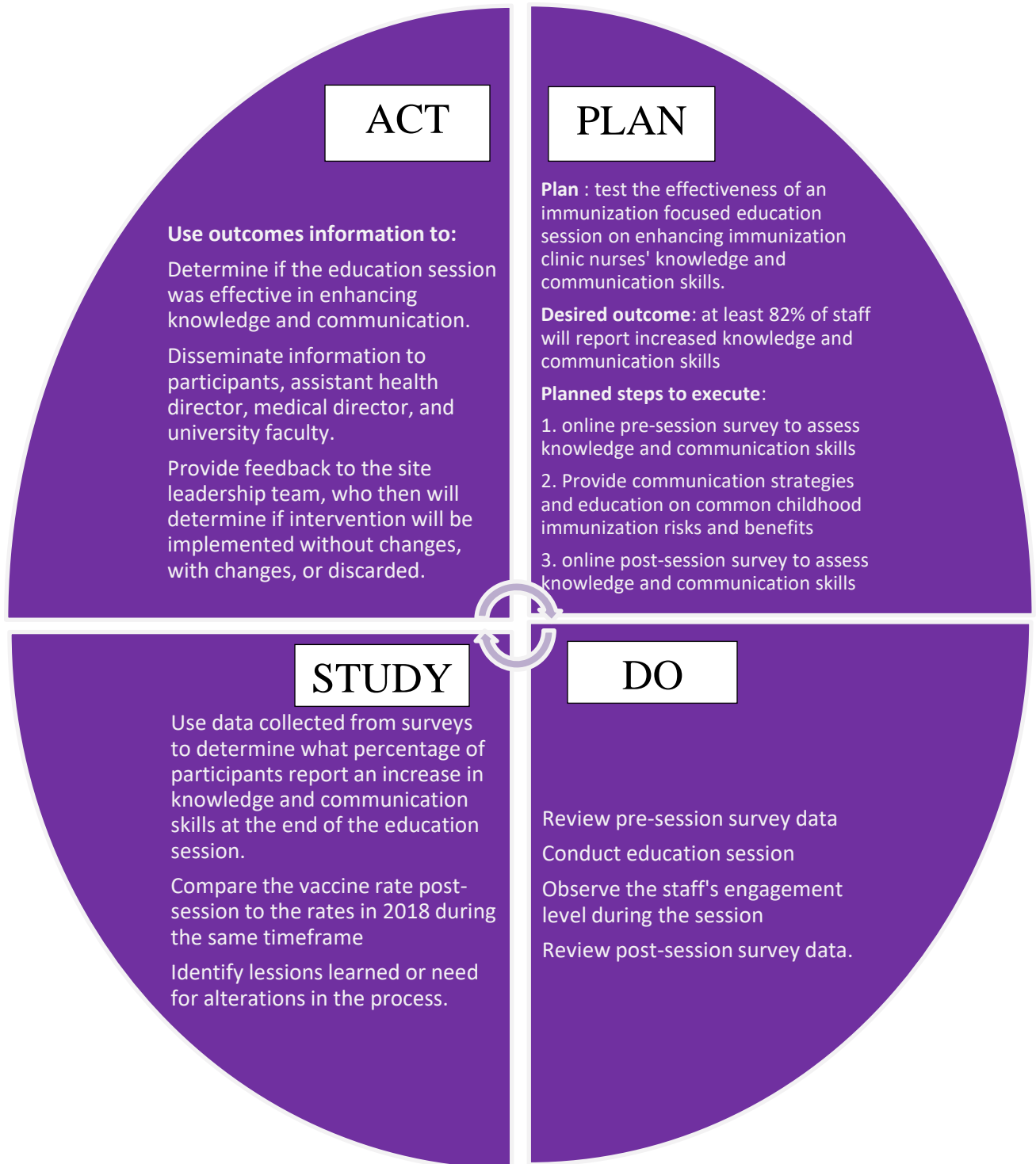


Figure 3.2. PDSA Cycle: Enhancing Knowledge and Communication Skills. This figure depicts the use of the PDSA cycle to test the effectiveness of an education session to enhance clinic nurses’ knowledge and communication skills at a local health department.

Summary

Motivation is essential when working with individuals to produce a change in behavior. Many extrinsic and intrinsic factors can play a role in the level of motivation a person has to complete a task or implement a change. External sources, i.e., grades, opinions of others, and rewards motivate some people. Internal factors, i.e., interest, curiosity, and values, motivate others. The self-determination theory focuses on intrinsic and extrinsic motivation and proposes that autonomy, competence, and relatedness foster high-quality forms of motivation and engagement for activities (Self-Determination Theory, 2019). An individual feels safer and more motivated when they possess a greater sense of autonomy, competence, and relatedness.

The DNP project aimed to foster autonomy, relatedness, and competence in the immunization clinic nurses and parents seeking immunization services. A PDSA cycle was used to provide vaccine education and strategies for effective vaccine conversations. The staff enhanced their competence through participation in the education session. All clinic nurses participated in the training, thus providing an environment where the nurses felt they are not alone in the practice change. Autonomy resulted when the nurses used the communication skills and information gained to determine how they will change their practice of communication with parents. The outcome of the DNP project transferred aspects of the SDT to parents who received services. With effective communication, the nurses were able to empower parents with information that will lead to intrinsic and extrinsic motivation to vaccinate their child.

Chapter Four: Pre-implementation Plan

The goal of the project was to increase the knowledge and communication skills of immunization clinic nurses at a local public health department in the southwestern region of North Carolina. For the successful completion of the project, the DNP student had to ensure its proper oversight and management. Project management included maintaining adequate and timely communication with the project team, interprofessional collaboration, and monitoring of progress. Successful implementation required organized pre-implementation planning, which included risk assessment, cost analysis, institutional review board (IRB) approval or waiver, and plans for outcome evaluation.

Project Purpose

The purpose of this quality improvement project was to improve patient and community health outcomes by enhancing the knowledge and communication skills of immunization clinic nurses. The aim of the project was to equip nurses with information on recommended childhood immunizations, as well as to provide effective communication techniques to increase their comfort level when educating families. When nurses are more knowledgeable and confident talking about vaccines, families can make informed decisions about vaccine uptake.

Project Management

Organizational readiness for change. The immunization clinic health manager voiced a desire for assessment of staff's vaccine knowledge and improvement of communication skills. The medical director approved the project idea and provided input on the education session's content. The health director also approved the QI project's use in the organization. The organization's leadership team acknowledged the excellent work performed in the clinic; however, they were receptive to support improvement opportunities.

Interprofessional collaboration. The clinic's health manager, supervisor, assistant health director, medical director, and the DNP student comprised the project team. The student's faculty advisor also supported this project. The DNP student served as the project lead. The DNP student attended initial meetings with the assistant health director and health manager. Later, the student met individually with the medical director to discuss project goals and processes. All project team members gave valuable input for project development and implementation. The assistant health director was the project champion. All other project team members provided continual support. The medical director insisted on practice changes to improve how the clinic providers promote immunizations. The epidemiology team were collaborative partners involved in the project's success. For example, the epidemiologist supplied immunization data at the project site. The data served as an essential baseline, pre-intervention information.

Risk management assessment. Quality improvement requires evaluation and planning for events that could happen in a project. Before implementation, the DNP student conducted a strengths, weaknesses, opportunities, and threats (SWOT) analysis. Using SWOT analysis, the DNP student determined predictable and unpredictable events that could impact project implementation, completion, and success.

Project strengths included an investment in the health of the community, literature support, help at the site, and DNP faculty guidance. Additional advantages were the DNP student's organizational skills and adherence to the prescribed timeline to complete the project.

Project weaknesses were the DNP student's inability to perform all team suggested interventions because of potential HIPAA violations. Specifically, the assistant health director wanted the student to observe the clinic nurse's patient interactions to assess their

communication. Instead, the student completed contacts with staff to evaluate the need and readiness for vaccine knowledge and enhanced communication skills.

Project opportunity was the QI project's intervention of routine assessment of knowledge and communication in the clinic. The educational session encouraged the staff to change their practice from immunization promotion for school readiness to immunization promotion for public health and protection. Additionally, the implementation of this intervention in other healthcare areas could provide opportunities for increased knowledge and communication skills at numerous health care organizations.

The last step in the SWOT analysis is threat assessment to the project. The immunization clinic was involved in a community-wide vaccine effort during project implementation. The clinics gave vaccines to students to prevent non-compliance exclusions from school. This campaign posed a time allocation threat. To address this threat, surveys, the education session, and follow up visits were all completed during staff breaks or between patient interactions. Another risk considered before implementation was employee availability; this would make it difficult for every staff member to participate, as well as affect the sample size.

Organizational approval process. Site selection was an important step in project planning. The DNP student developed professional relationships with the organization's leadership team before beginning the project. Initially, the health manager and the author DNP student discussed the QI project proposal. After the clinic manager agreed to support the project, the DNP student met with the health director, medical director, and assistant health director. The clinic leadership team decided that the project would be beneficial to the organization and the community. The project champion, the assistant health director, wrote a letter of support to confirm organizational approval (see Appendix C).

Information technology. Information technology programs used in the QI project were Microsoft Outlook, Word, PowerPoint, Excel, and Qualtrics. The DNP student did not access patient protected health information to comply with the Health Insurance Portability and Accountability Act (HIPAA). Pre- and post-intervention survey data was collected and stored in an Excel spreadsheet.

Cost Analysis of Materials Needed for Project

There were minimal costs associated with the project. Much of the communication with the project team took place via phone or electronic mail. The project site incurred no lost billable time because the implementation was during the clinic lunch hour. Printing costs involved copies of the immunization quiz and the PowerPoint presentation (see Appendix D). Printing costs totaled approximately \$10. The clinic staff was served pizza and beverages during the education session at the expense of \$30. Clipboards were purchased to hold the post-contact questionnaires at the cost of \$4. Travel to and from the project site, 20 visits roundtrip, was calculated at \$.45/mile for 840 miles for a total of \$378.00 (see Appendix E).

Plans for Institutional Review Board Approval

The local health department does not have an organizational IRB. However, the director of nursing, who oversees students within the organization, requested the DNP student present the project proposal to the compliance office personnel. Although there was no formal process for project approval, the health director, compliance officer, nursing director, and medical director's approval were necessary before the project champion could sign the organizational approval letter of support.

After receiving approval from the project site leadership team, the IRB/QI Program Evaluation Self-Certification Tool Guidance document was completed and submitted to the East

Carolina University IRB. The ECU IRB determined the project was a quality improvement project and not research, with no ethical conflicts. The DNP student received a waiver of IRB review on June 20, 2019 (see Appendix F).

Plan for Project Evaluation

Demographics. The Immunization Conversations Pre-Intervention Survey was used to collect demographic information (see Appendix G). Demographic information included the participants' years of health care experience and immunization experience. The DNP student reported these demographic data points as descriptive statistics (i.e., means and ranges). Figures developed from information entered into Qualtrics were used to present the demographic information (see Appendix H). Small participant sample size excluded age and educational degrees related to HIPAA identifiers. Specifically, in a small sample, individuals could be identified by age and academic degrees.

Outcome measurement. One QI outcome measure was 80-100% of participants would self-report enhanced knowledge and improved communication skills post-intervention. The post-intervention survey allowed the participants to give feedback on the presentation, as well as express their plans to implement the knowledge and strategies learned into practice.

The second QI outcome measure was to determine if the rate of vaccine uptake increased after the information session. The epidemiology department reported the number of vaccines administered after the education session for a specified time. The DNP student compared pre- and post-project data to determine if the education intervention positively affected vaccine uptake rates.

Evaluation tool. The Preparing Nurses for Vaccine Conversations Post-Intervention Survey (see Appendix I) evaluated the success of the education session. The DNP student

adapted the evaluation tool for entry into Qualtrics. The Qualtrics survey results assisted the DNP student to determine the success of the education intervention by determining if 80-100% of participants had enhanced knowledge and communication skills. The tool prompted participants to express how the information session impacted their knowledge, communication, plan for practice change, and perceived barriers to practice change. The survey questions were in forms of multiple-choice Likert scale, short answer, and open-ended questions. Data received from the informatics manager was compiled in an Excel spreadsheet to compare vaccine uptake from 2018 to 2019 (see Figure 4.1).

Figure 4. Comparison of Vaccine Administration

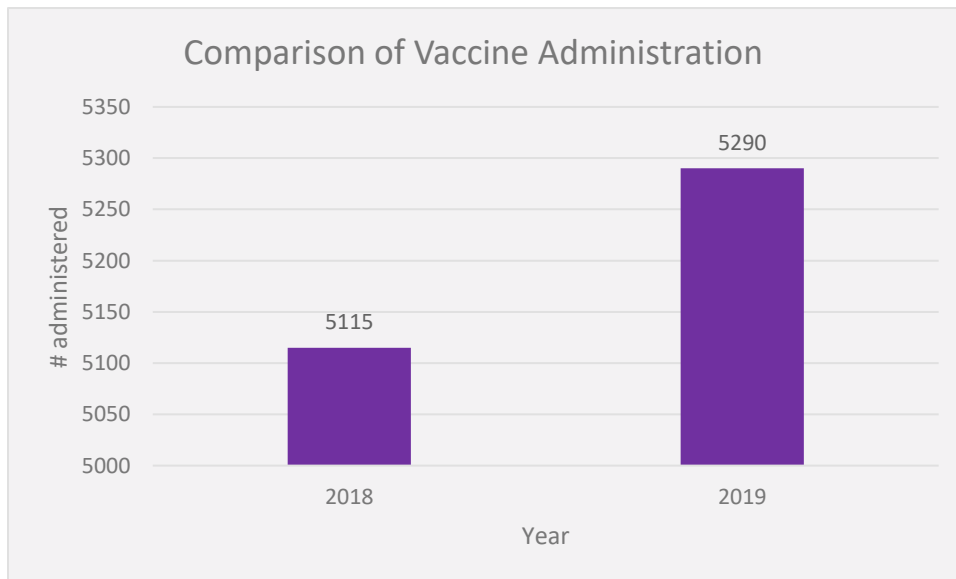


Figure 4. This figure depicts a comparison of the number of vaccines administered in the immunization clinic from August through November 2018 to the same timeframe in 2019.

Data analysis. Data collected from the pre- and post-intervention surveys and the epidemiology department were analyzed to determine the success of the project outcomes. The DNP student compared the pre-session and post-session ratings of knowledge of immunizations and confidence in communication. Data were summarized using descriptive statistics.

Participants' perceived barriers to communication and suggestions for practice change was captured via the post-contact questionnaire and reported as narrative remarks and themes. Data received from the epidemiology department determined if there was a change in vaccine uptake after the education session. There were no local, state, or national benchmarks for immunization knowledge and communication skills; therefore, the DNP student did not attempt a comparison.

Data management. The ECU login/password protected Qualtrics application coded the data from the data collection tools. The DNP student entered the information populated in Qualtrics into Excel for analysis. A password-protected computer and ECU College of Nursing Pirate drive kept all data secure throughout the project. After dissemination of the project results, the DNP student deleted all data from OneDrive and the computer. None of the data collected included protected personal information or patient health information (PHI), thus no possibility for privacy violations.

Summary

Careful consideration and planning were necessary for the pre-implementation phase of this project to ensure project completion and success. When managing a QI project, one must consider the project site's readiness for change and set a standard for interprofessional collaboration. Relationships with the project site's leadership team was a significant contributor to interprofessional collaboration. A key element of project planning is assessing risks. A thorough risk assessment allowed the DNP student the opportunity to identify strengths, weaknesses, opportunities, and threats of the project. The risk assessment led to careful planning, organization, and development of a DNP project subsequently approved by the project site. The project was not considered research, therefore, was waived from ECU IRB review.

Other essential components of pre-implementation include project evaluation planning, cost analysis, and determining the technology necessary for implementation. Identification of the data collection tools, project evaluation tools, method of data storage and security, and the analysis plan was a pre-implementation step. Careful project evaluation planning leads to successful implementation since the evaluation guides how the team determines project outcomes.

Chapter Five: Implementation Process

The implementation of the DNP project occurred between August 2019 and December 2019. During this period, participants completed pre-implementation surveys, participated in the education session, completed the post-implementation survey, and the DNP student provided post-implementation support. This chapter provides an overview of the setting, participant recruitment and selection, project implementation, and any plan variations.

Setting

A local health department in the southwestern region of NC was the project site. The health department is a public entity serving all citizens of the county Monday through Friday, 8:00 AM to 5:00 PM. Federal funds, state funds, and local appropriations from the county fund the agency. Other sources of funding include grants, contracts, and revenue. The agency has no affiliation with any university. The health department benefited from the DNP project, as the project enhanced the clinic nurses' vaccine knowledge and communication skills. Increased knowledge and communication skills allowed the nurses to provide a higher quality service to the public. The immunization program has one primary clinic location and two ancillary sites.

Participants

The project participants included the immunization clinic manager and nurses. The staff nurses provide direct care to patients seeking immunization services or information. Due to staffing shortages, the manager provides direct supervision over the clinic, the day-to-day operations, and supports the nurses. The manager is responsible for ensuring the overall services of the clinic (i.e., budget, community events, and "mass" clinics) are meeting the goals of the organization. All participants provide immunization services in the community during immunization events and services to patients who need immunizations for travel. The leadership

team and DNP student agreed that all nurses, including leaders, working in the immunization clinic, would participate in the project.

Recruitment

The recruitment process involved discussion with the clinic leadership team for approval of the project. The project sample was a convenience sample; the clinic leadership set an expectation for all nurses in the immunization clinic to participate in the project. The supervisor sent an electronic mail to the nurses providing an overview of the project and the leadership's expectation of full participation. The nurses were all female with nursing experience ranging from 14-20 years. The DNP student visited the site five times during the pre-implementation phase to introduce the project to the nurses. The nurses agreed that vaccine conversations could be challenging at times, noting difficulty addressing parental concerns. The staff was concerned about the timing of the education session. The DNP student assured the participants that the implementation of the project would not interrupt their day-to-day operations or require work outside of regular business hours.

Implementation Process

The project included the implementation of nurse education, ongoing support, post-contact vaccine conversation questionnaires, and follow-up and reminders. During implementation, the DNP student collaborated with the clinic manager to enhance the information provided by immunization nurses to parents/patients during vaccine conversations.

Pre-Intervention. The DNP project began with the distribution of the pre-intervention survey (see Appendix G). The survey was sent to participants via electronic mail using Qualtrics software. The pre-intervention survey was sent two weeks before the scheduled date for the education session. The electronic mail included a brief thank you for participation, instructions

for completion, and the survey link. Participants who had not completed the pre-intervention survey one-week after delivery of the initial electronic mail received a reminder generated from the Qualtrics software. When the survey period concluded, the Qualtrics software created and sent electronic thank-you letters via electronic mail.

Intervention. The DNP student conducted an education session with the clinic staff and other nursing personnel. The meeting included an overview of the DNP project, information on common myths and fears about vaccines, vaccine safety information, and communication strategies. The student scheduled the meeting, in collaboration with the clinic manager, for a date and time conducive to optimal attendance by the clinic nurses. The session lasted one and one-half hours. Four immunization clinic nurses, the director of nursing, the clinic interpreter, and two supervisors from the School Health program were in attendance. The DNP student used a PowerPoint presentation to conduct the education session (see Appendix D), in addition to resources from the CDC (see Appendix J).

Post-Intervention. Post-intervention surveys (see Appendix I) were distributed via electronic mail using the Qualtrics application. The survey was open for 14 days and sent to all participants that attended the education session. The Qualtrics software generated and distributed electronic reminders and thank-you letters. The DNP student reminded participants to complete the survey during a follow-up visit after the education session. Due to a lack of completion during the time the post-intervention survey was open, the DNP student resent the post-intervention survey after the data collection period ended.

Evaluation method and data collection. The DNP student completed follow-up visits with the immunization clinic nurses at each site weekly. During the initial follow-up visit, the Vaccine Conversations Post-Contact questionnaire was reviewed and explained to each nurse

(see Appendix K). The DNP student instructed the participants to complete a questionnaire after interaction with each patient they served. The DNP student provided a clipboard and multiple copies of the questionnaire to each clinic nurse. The nurses were informed not to include any PHI on the surveys and encouraged to provide transparent feedback on barriers to communication.

The DNP student visited each project site location a minimum of one time per week, with the primary project site being visited two times per week on occasion. During the site visits, the DNP student reiterated the communication strategies and vaccine information presented in the education session. The DNP student reviewed the project progression and restated the expected completion date of data collection. During each visit, the student collected post-contact questionnaires and provided additional copies of the survey as necessary. The student compiled the data from the questionnaires weekly.

The student used an Excel document to compile the data collected from the post-contact surveys. Excel was used to create visual depictions such as run charts, tables, and graphs from the data gathered at all project sites. Additionally, the DNP student used the Excel document to evaluate the pre- and post-intervention survey data.

The data provides evidence that project implementation was a success. During the first week of data collection, the nurses reported inquiring about patient/parental questions and concerns 96% of the time, and they reported using knowledge gained from the education session 55% of the time. In the last week of data collection, six weeks later, the nurses reported inquiring about questions and concerns 100% of the time and using the knowledge from the information session 77% of the time. According to the data received from the informatics manager, there was a 4% increase in vaccine administration from September through November of 2019 when

compared to the same timeframe in 2018. However, the analysis of this data could not confirm that the increase was a direct effect of this DNP project.

Plan Variation

A vital plan variation was the number of participants. Before implementation, the immunization clinic underwent some staff turnover. The staffing change decreased the number of full-time clinic nurses to five, and the supervisor went out on leave. The DNP student and clinic manager decided to invite some ancillary health department staff who occasionally work with immunization to attend the education session. The non-clinic nurses in attendance included the director of nursing and school health supervisors. These participants completed the pre- and post-intervention surveys; however, they did not participate in completing the post-contact questionnaires, as they do not interact directly with patients/families regularly.

Due to the timing of implementation, the DNP student had to alter the plan for initiating post-session follow-up. The immunization clinic was busy implementing its initiative of mass vaccination clinics immunizing school-age children to prevent exclusion from school due to non-adherence. The clinic did not function on regular clinic hours for approximately one week, due to participation in the mass exclusion clinics. A mass clinic is a specialized clinic designed to meet the immunization needs of a mass population during a specific timeframe. The exclusion clinic provided immunizations to children who were at risk of exclusion or already excluded from school for non-adherence to the NC public school immunization requirements. The DNP student was unable to start the initial follow-up until after completion of the exclusion clinic.

Another variation arose due to two clinic nurses not attending the education. The student conducted one-on-one education sessions with the two nurses. One nurse's training was delayed by four weeks due to the clinic initiative and personal time out of the office. Therefore, she was

not able to participate in the post-contact surveys until she completed the training with the student.

During the ongoing follow-up, the DNP student discovered that the nurses were not completing a post-contact survey after each patient contact. Upon this discovery, the student collected feedback from the nurses on the best way to get the surveys completed. Initially, the questionnaires were provided directly to the nurses from the DNP student. At data-collection week four, the DNP student worked with the registration staff to place the document with other paperwork that followed the patients through their visit. This change provided the clinic nurses with a copy of the survey as they were reconciling paperwork. Upon completing the questionnaire, the nurses continued with placing it on the specified clipboard for the student to collect.

Summary

The goal of implementing the DNP project was to provide the immunization clinic nurses with a brief overview of common myths, concerns, and fears related to vaccines, vaccine safety, and valuable communication strategies to use when discussing vaccines. The DNP student desired to know the clinic nurses' baseline vaccine knowledge and confidence in communication and compare it to knowledge and communication skills after participating in the project. This comparison was made possible with the use of the pre-and post-intervention surveys. The post-contact questionnaires completed by the clinic nurses were successful in collecting data to determine if the nurse were engaging patients in vaccine conversations, as well as using the information gained from the education session in daily interactions with patients. The project implementation was a success. The student completed the education session, performed follow-

up and data collection with minimal variation, and the nurses reported an increase of knowledge and confidence in communication after the project implementation.

Chapter Six: Evaluation of the Practice Change Initiative

Vaccines are one of the most effective methods of disease prevention across many nations. Provider recommendation significantly affects the acceptance of vaccines. The DNP project aimed to enhance nurses' communication about vaccines through education. This chapter provides an overview of the DNP project's demographics, outcomes, and findings.

Participant Demographics

The project participants were all women with a Bachelor of Science in Nursing degree. The number of years of nursing experience and the number of years of immunization experience were collected as demographic information to provide a depiction of the project participants' nursing and related experience (see Appendix G). The range of years of experience was 14 to 36 years (see Figure 6.1). The mean number of years of nursing experience was 18.7. The median was 16 and 17 years, and the mode was 14 years of experience in nursing. The range of years of immunization experience was zero to 25 years. The mean number of years of immunization experience was 8.5, the median was eight and seven, and the mode was eight years of immunization experience.

Figure 6.1. Participant Years of Nursing Experience

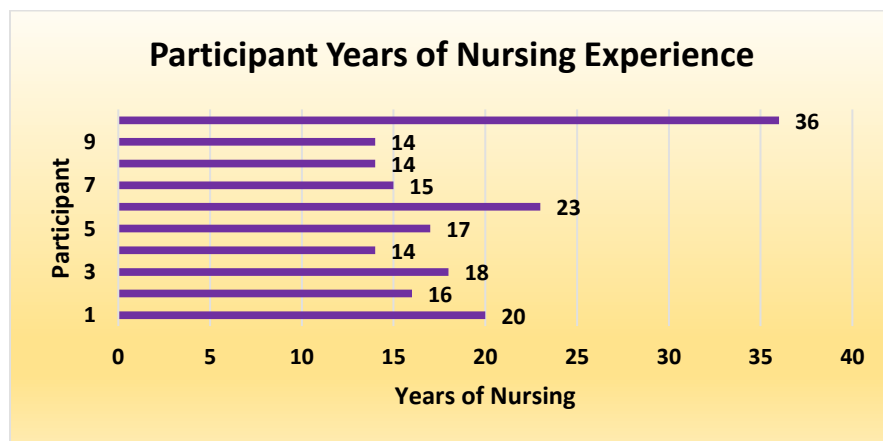


Figure 6.1. This figure depicts the range of the number of years of nursing experience of the 10 participants that completed the pre-intervention survey.

Intended Outcome(s)

A short- and long-term outcome of this DNP project was to increase vaccine knowledge and communication skills of nurses in a large public health immunization clinic. By enhancing nurses' knowledge and communication, the project aimed to ultimately increase vaccine uptake in the local community. The nurses' report of increased confidence in communicating about vaccines measured the success of the project. The nurses also indicated, via the post-contact questionnaire, whether they asked families about questions and concerns regarding immunizations if they used the information from the education session in their conversations, and they identified any perceived barriers to communication.

A short-term outcome intended from this project was for the practice to correct the process of completing partial patient interviews in an open area in the clinic where privacy was not protected. During the partial interview, the nurses asked the families questions to confirm demographics, as well as, verbalized the recommended immunizations. The DNP student recognized this interview process might inhibit the patient and family verbalization of concerns regarding vaccinations.

An intermediate outcome was to get the clinic nurses to complete the post-contact questionnaires at an increased rate. The primary completion method was for the nurse to complete a survey placed on a clipboard in each clinic room. This method relied on the nurses remembering to refer to the clipboard after each visit. An alternative approach developed by putting the questionnaires with the patient's visit paperwork increased ease of access to the surveys; thus, increasing the rate of completed.

A long-term outcome expected from this project is for the project site to have an increase in vaccine uptake, secondary to the excellent job of the nurses in educating patients about

vaccines. Ongoing education of clinic nurses will keep updated vaccine information at the forefront of their conversations with families. This education will expand the nurses' knowledge and enhance their communication to portray factual information about vaccines effectively. Improved communication will lead to families gaining adequate knowledge of the benefits, risks, and side effects of immunizations, thus increasing the number of community members to accept vaccines.

Findings. The project's goal was to enhance nurse-patient vaccine conversation through vaccine education and review of effective communication techniques. The DNP student sent pre-intervention surveys to 16 nurses at the project site. Of the survey recipients, 56.3% ($n=9$) completed the pre-intervention questionnaire. Eight nurses attended the education session. 50% ($n=4$) of the session participants participated in the post-education portion of the DNP project. The education session was reviewed with one additional nurse, yielding the post-session project participants to five nurses. 67% ($n=6$) of nurses reported feeling somewhat comfortable with addressing vaccine concerns, 11% ($n=1$) reported feeling somewhat uncomfortable, and 22% ($n=2$) reported extreme comfort with addressing vaccine questions and concerns (see Figure 6.2).

Figure 6.2. Nurse’s Pre-Intervention Comfort with Addressing Vaccine Concerns

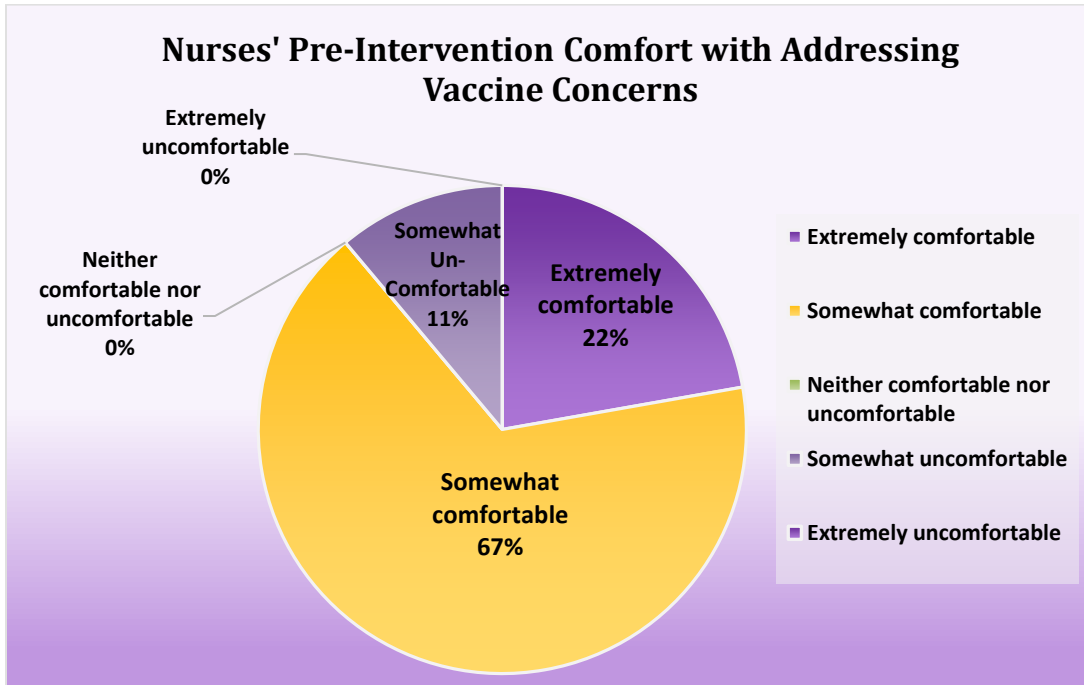


Figure 6.2. This figure is a depiction of the pre-intervention level of comfort the nurses had with addressing vaccine questions and concerns.

During the PDSA cycles, the DNP student collected post-contact survey questions from three nurses at the primary clinic, and one nurse at each ancillary clinic. Figure 6.3 is a depiction of the nurses' responses to survey question #1 - "Did you ask the patient/parent if they had questions or concerns regarding recommendation?" By data collection cycle number three, the nurses were reporting inquiring about vaccine questions or concerns 100% of the time. There was an increase in responses at collection cycle four; this increase occurred when the DNP student changed the distribution of the surveys by having them placed in the patient's record for completion with all other paperwork. This method proved more effective than the initial approach of putting the questionnaires on a clipboard in each clinic room with the expectation the nurses would refer to the clipboard at the end of each visit.

Figure 6.3. Were Clients Asked about Vaccine Questions/Concerns?

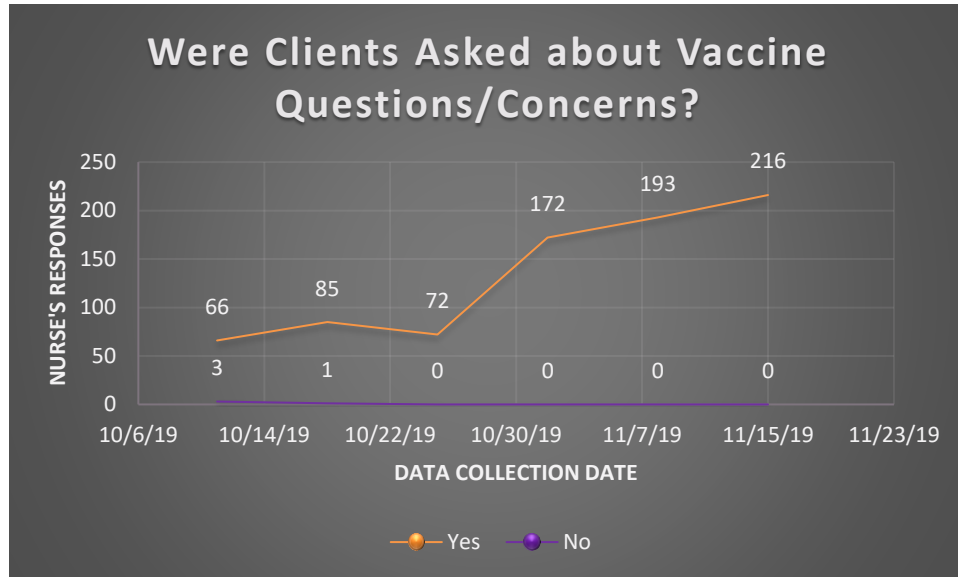


Figure 6.3. This figure depicts the nurses’ responses to the post-contact questionnaire question #1- Did you ask the patient/parent if they had questions or concerns regarding recommendation?

Post-contact survey question #2 asked, “Did you use knowledge or communication skills learned from the education session with this patient/family.” In collection cycle one, the nurses reported using the session information in 93% of patient interactions reported (see Figure 6.4). The reported number of contacts increased by the final collection cycle; however, reported use of the session information decreased. The 20% decrease was a result of the nurses' belief that as time passed, the knowledge and skills used in vaccine conversations were a part of their routine and not a direct link to the session information.

Figure 6.4. Did the Nurses Use Information from the Education Session during Vaccine Conversations?

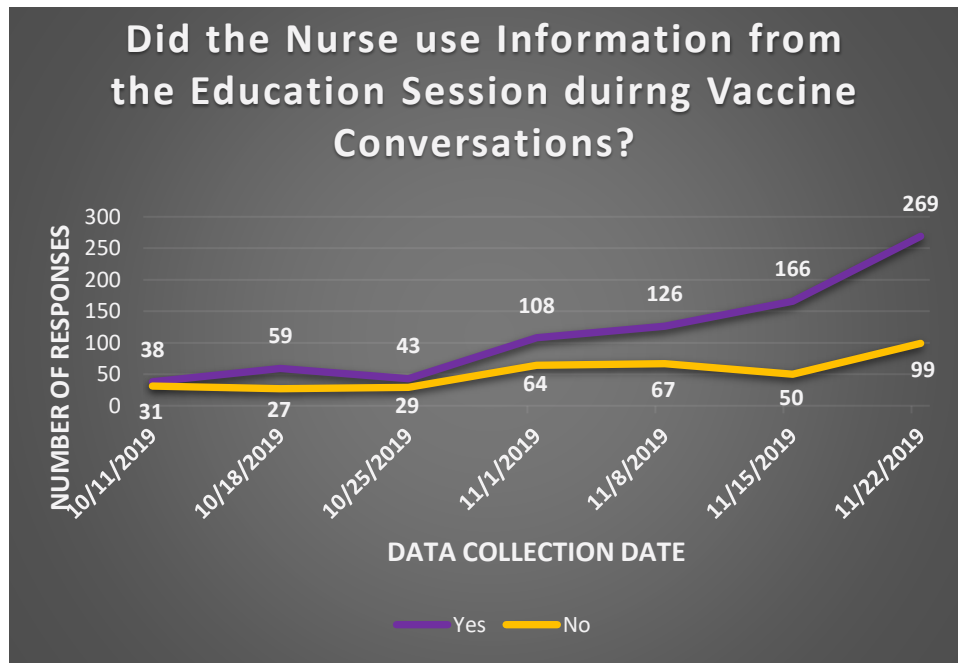


Figure 6.4. This figure depicts the responses of the post-contact questionnaire question #2- “Did you use knowledge or communication skills learned from the education session with this patient?”

The final question on the post-contact questionnaire inquired about barriers nurses faced that inhibited discussing vaccine concerns with patients/families. A culmination of the responses revealed the most common barrier reported was language barriers. The nurses conveyed being unsure if the patient or parent fully understood the information despite the use of interpreting services. The nurses reported the use of the telephone interpreting service and busy clinic schedule left the nurses feeling they may not have adequately educated the family. The second most common barrier reported by the nurses was the lack of attention to the conversation by the parent. Inattention to the visit was attributed to parents or siblings recording the administered care, texting, telephone conversation, or playing games on the cellular phone.

The post-intervention survey was initially distributed to all participants of the education session ($n=9$) two weeks after the education session and again at the culmination of data collection. The nurses responded at a rate of 56% ($n=5$). Ninety percent of the nurses reported they “strongly agreed” that their confidence in vaccine communication increased due to the DNP project (see figure 6.5).

Figure 6.5. Nurse Report of Increased Confidence in Vaccine Communication

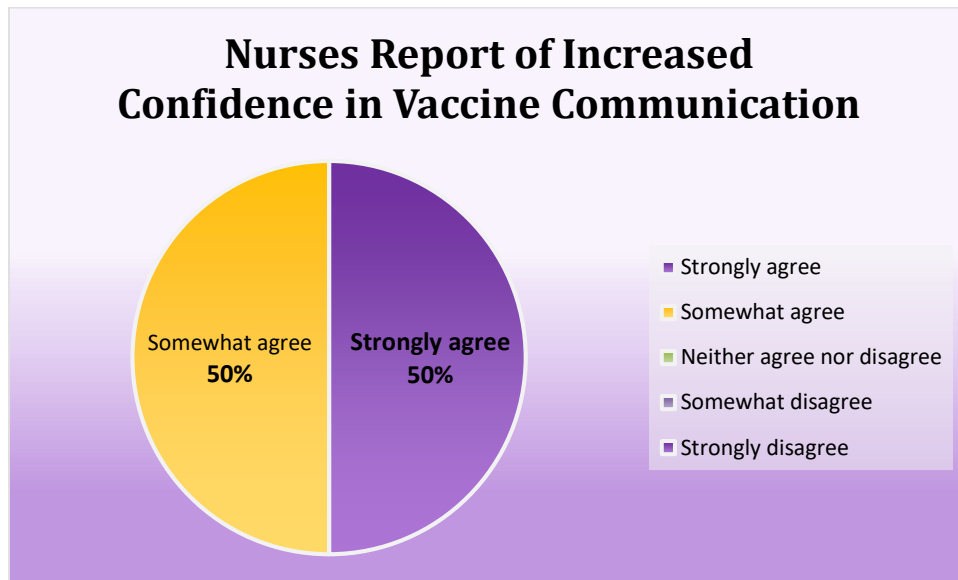


Figure 6.5. This figure depicts the nurses’ response to question #9 on the post-intervention survey, assessing the level of agreeance of increased knowledge in vaccine communication as a result of the DNP project.

Summary

The proposed outcomes of the DNP quality improvement project were to increase the knowledge and communication skills of nurses in an immunization clinic. This chapter provided data to support the success of the project. The data revealed 50% of the participants "strongly agreed" that because of the DNP project, their confidence in vaccine conversations increased, and 50% of participants "somewhat agreed" that their confidence grew as a result of concerning the DNP project. The project goal was for 100% of the participants to report feelings of

increased confidence in vaccine communication at the culmination of the project. The next chapter will outline the DNP project's implications for nursing practice.

Chapter Seven: Implications for Nursing Practice

The Doctor of Nursing Practice (DNP) degree is one way for nurses to aid in the ever-evolving needs of health care. Numerous colleges and universities across the nation have implemented DNP programs of study. To ensure DNP programs' curricula meet content and competency expectations, the American Association of Colleges of Nursing (AACN) developed eight DNP *Essentials* of doctoral education for advanced nursing practice. The DNP *Essentials* serve as foundational competencies that all DNP graduates must possess upon completion of a program (American Association of Colleges of Nursing [AACN], 2006). Doctorally prepared nurses are in a unique position to serve the population's health care needs as well as to use their knowledge to lead quality improvement initiatives to influence health care practices.

Practice Implications

This chapter will briefly introduce the eight DNP *Essentials* and highlight the relationship between each *Essential* to this DNP project. This chapter will provide the reader with implications for future practice for each DNP *Essential*.

Essential I: Scientific underpinnings for practice. DNP *Essential I* focuses on the transformation of knowledge into practice. According to the AACN (2006), scientific knowledge guides the practice of nursing. Thus, DNP *Essential I* require graduates to glean from the knowledge gained through science, research, and theory to advance and improve health care. For the DNP project, the student increased awareness and understanding of the reasons guiding fear or hesitancy related to immunizations. This understanding allowed the DNP student to prepare an education session focused on addressing those areas. The DNP project utilized the underpinnings of the self-determination theory to develop strategies to improve vaccine conversations. These

strategies were shared with the nurses in the immunization clinic to build their confidence in addressing concerns and fears regarding vaccines.

In future practice, immunization programs can provide education and refresher courses to ensure that nurses are aware of the safety measures in place to approve vaccine use.

Immunization programs can offer opportunities for nurses to participate in communication-based education programs or training to enhance their communication skills. In the pre-intervention survey for this DNP project, every participant indicated they were not 100% confident in discussing vaccine concerns with parents. Therefore, communication-focused training would aid in nurses adequately addressing the needs of parents seeking immunizations for their child(ren).

Essential II: Organization and systems leadership for quality improvement and systems thinking. *DNP Essential II* is grounded in the thought that DNP nurses are accountable for ensuring quality service and safety (AACN, 2006). *Essential II* assures graduates are leaders in quality improvement, possessing exceptional communication skills, and are knowledgeable in business, finance, and economics (AACN, 2006). In meeting *DNP Essential II*, a doctorally-prepared nurse would be able to appreciate the principles of practice management, to effectively balance productivity with quality of care. Other requirements of *DNP Essential II* include a focus on the cost-effectiveness of initiatives for change, management of ethical dilemmas at the practice, organization, and research levels, and possess cultural sensitivity and an awareness of diverse populations.

The DNP project focuses on improving the service delivered to patients seeking care in an immunization clinic. The project aimed to improve communication during vaccine conversations to adequately inform parents of the vaccines, side effects, risks, and benefits. Enhanced nursing communication has a significant impact on patient understanding and

satisfaction with service. The DNP student exhibited systems thinking in gaining an understanding of clinic flow to identify any barriers that would inhibit adequate time and space for communication with families.

A future practice implication would be for immunization programs to implement patient satisfaction surveys to determine the patient's level of satisfaction with each visit. These surveys can provide space for the patient to expound on what boosted or brought down the satisfaction level. This initiative would provide the clinic with valuable feedback to consider when determining the best process and approach to patient care.

Essential III: Clinical scholarship and analytical methods for EBP. DNP *Essential III* necessitates nurses to analyze literature and research to determine and implement best practices. AACN (2006) believe that DNP *Essential III* prepares graduates to analyze and critically appraise literature and new evidence. DNP *Essential III* employs the nurse to serve as leaders in quality improvement initiatives, collect data and information to guide practice, develop effective interventions, and identify gaps in practice (AACN, 2006). DNP graduates can recognize new phenomena and gain knowledge from diverse sources to advance nursing practice.

The DNP student critically appraised literature and data on vaccine uptake hesitancy and used the information to develop an education session to motivate and empower nurses to enhance communication with patients and parents about immunizations. There is a vast amount of literature on vaccines and vaccine hesitancy; therefore, the DNP student routinely assessed for more updated research on the topic.

In the future, this immunization clinic could implement a journal club. The premises of this initiative would be for nurses to identify pertinent literature related to immunizations to be

reviewed by clinic staff. A journal club is an innovative way to keep the most updated information on vaccinations at the forefront of the clinic nurse education.

Essential IV: Information systems/technology and patient care technology for the improvement and transformation of healthcare. DNP programs prepare graduates to utilize technology for the advancement and enhancement of patient care (AACN, 2006). DNP graduates are leaders in health care technology and academics. *Essential IV* ensures graduates can utilize technology to evaluate the efficacy of patient care technology and use this to assess programs, systems, and outcomes of care (AACN, 2006). Doctorally prepared nurses can recognize the value of advances in technology to oversee budget and productivity of practice and improve care through web-based learning and innovative tools. DNP graduates must possess the necessary knowledge to appropriately select and evaluate information systems and technology to enhance patient care.

The DNP student utilized the Qualtrics software to develop surveys used in the project. Other technological knowledge needed for this project included knowledge of Microsoft Excel, Outlook, Word, and PowerPoint. The DNP student collaborated with the informatics team of the project site to determine data related to the number of patients seen, as well as, number of refusals of vaccines.

An implication for future practice would be to utilize the data reports related to vaccine uptake to determine times of decline or increase. Upon learning times of decrease or increase, the clinic would assess for areas in the clinic process that contributes to the reduction or increase. Utilizing the data would afford the clinic to determine interventions or situations that promote uptake and work to identify what contributed to the declines in uptake.

Essential V: Health care policy for advocacy in healthcare. Health care policy is a crucial aspect of health care and the nursing profession. Health care policy can empower or hinder systems of care and practice, as well as affect providers' ability to deliver safe, effective care (AACN, 2006). Doctorally prepared nurses can serve as advocates to ensure policies are in place to support adequate care delivery. Advocacy can take place at the international, national, state, local, and organizational levels. DNP graduate nurses can adequately design, implement, and influence health care policy. The DNP graduate can influence policy addressing equity, equality, and social justice in health care (AACN, 2006). The DNP nurse advocacy and influence can help decrease overall health disparities, but especially among minorities and families of the lower socio-economic status. DNP *Essential V* requires that graduates are efficient in analyzing health care policy, educate stakeholders, and possess a willingness to move into action to influence lawmakers and organizational leaders (AACN, 2006). Another area that *Essential V* focuses on is the DNP graduates' ability to make an impact on health care finance regulation through political activism and policy development.

During the DNP project, the DNP student identified an area in the clinic process that did not protect patient privacy. Through advocacy, the DNP student brought the finding to the attention of the clinic leadership and brainstormed to determine the best way to correct the process error. Other times during the project, the DNP student collected feedback from the clinic nurses to identify any areas or processes in their work that served as barriers to vaccine conversations with their patients. Most items identified were related to language barriers, in which the clinic already has processes in place to communicate with families in which English is their second language. One other area identified was patients and parents not fully engaged in communication due to cell phone use.

In future practice, the clinic can implement a “no cell phone use in exam room” policy and train nurses on effective ways to communicate the need for the patient or parents’ full attention during immunizations. The clinic currently has signs posted for "no cell phone use," however, if the clinic enacts a "cell phone use" policy, then every nurse would act in the same manner when faced with discussing cell phone use during immunizations.

Essential VI: Interprofessional collaboration for improving patient and population health outcomes. DNP *Essential* VI highlights one of the most effective ways DNP nurses can affect quality health care, that is, interprofessional collaboration. The ability of the DNP graduate to effectively collaborate with professionals of other disciplines is crucial to the success of health care delivery. The DNP nurse must possess excellent communication skills when working with professionals of varied disciplines. DNP nurses must excel in establishing and leading interprofessional care teams in simple and complex care settings (AACN, 2006). This *Essential* requires the DNP nurse to develop and implement practice models, practice guidelines, health policy, standards of care, and conduct peer review (AACN, 2006). Inter- and intraprofessional collaboration allows the DNP nurse to view health care from a different lens and serve as a valuable care team member to optimize the quality of care.

During this project, the DNP student effectively collaborated intraprofessionally with the clinic nurses and leadership team members. Other professionals contributing to the success of the project included a pediatrician, an informaticist, DNP faculty, clinic interpreters, and registration staff members. The DNP student served as the project leader and was able to analyze the clinic practices, review the standard of care, and make recommendations for future practice models.

In future practice, the clinic nurses would collaborate with the interpreters to gain knowledge of how best to deliver information about vaccines to non-English speaking families.

Another collaboration opportunity would be working with the organization's learning center to set up education on communication and cultural diversity, given the number of non-English speaking patients and families encountered daily. One other collaboration the clinic could foster would be with the health promotions team within the organization. Collaborating with health promotions staff would aid in the efforts to educate the community on the importance of immunizations for the safety and health of the public.

Essential VII: Clinical prevention and population health for improving the nation's health. DNP *Essential VII* is a driving force for health care. A focus on health promotion, disease prevention, and risk reduction is imperative for optimal health care outcomes (AACN, 2006). The other vital aspect of DNP *Essential VII* focuses on the health of “aggregate, community, environmental, and cultural dimensions of health” (AACN, 2006, p. 15). The DNP graduate must serve as a leader in health care by implementing evidence-based practices around prevention and population health to better serve their patient population. To be successful at implementing EBPs, the DNP nurse must be efficient in analyzing epidemiology, biostatistics, and data to facilitate health care delivery. Development, implementation, and evaluation of population health and preventive care delivery systems is a significant responsibility of the DNP nurse (AACN, 2006).

Prevention and health promotion are the foundation for the development of immunizations. The DNP student's goal of the project was to encourage health promotion and disease prevention through enhancing the knowledge and communication skills of the clinic nurses. The DNP project helped the clinic nurses to change the practice of promoting vaccines for school readiness to a focus on the promotion of vaccination for overall health.

In future practice, the immunization clinic can continually focus on the promotion of immunizations for the health of the public. Other practice implications include promoting the services of the immunization clinic in other areas of the county, such as the department of social services. With promotion in multiple service areas of the county, the immunization clinic would be successful in spreading the word about the benefits of immunization and ensuring the public is aware of the clinic services.

Essential VIII: Advanced nursing practice. DNP *Essential VIII* includes the nurse's ability to design, implement, and evaluate nursing interventions to promote quality service (AACN, 2006). DNP nurses have significant knowledge, expertise, and mastery in the chosen area of nursing within a larger realm. DNP programs of study teach advanced assessment skills and prepare graduates to apply the principles of psychosocial, behavioral, sociopolitical, cultural, economic, and nursing sciences to their area of specialty (AACN, 2006). DNP *Essential VIII* charges nurses to employ systematic thinking to improve health outcomes. DNP nurses must be competent in developing and maintaining patient relationships, mentoring and supporting fellow nurses, and supporting patients and colleagues through periods of transition and change (AACN, 2006). *Essential VIII* requires the DNP curricula to provide nurses with learning experiences in varied settings throughout their program of study to include but not limited to hospital, long-term care, and the home and community setting. (AACN, 2006). Finally, the DNP nurse must use critical thinking to evaluate practice efficacy, care delivery, fiscal responsibility, ethical responsibility, quality outcome measures, and inform practice decisions (AACN, 2006).

This DNP project is a way for the doctorally-prepared student to implement the constructs of DNP *Essential VIII*. The DNP student was able to assess a system of care in the immunization clinic and develop a QI project that would improve nurse-patient interactions and

ensure patients/parents are making informed decisions around vaccine acceptance. Through the implementation of the project, the DNP student was able to guide, mentor, and support the clinic nurses in a change of practice to ensure patients were receiving adequate information about the risk and benefits of vaccines. When faced with barriers during the project, the DNP student employed aspects of *Essential VIII* by developing and sustaining therapeutic relationships with the clinic nurses and leadership to alter plans to fit the clinic needs better.

In the future, a DNP nurse can serve as a mentor to the clinic nurses by implementing a standardized education plan for new clinic nurses and ensuring continuing education for current nurses. This clinic can use the details of the DNP project as a foundation for an educational program for future practice. The clinic leadership would have the education session materials as a guide for the program and could make updates and changes as deemed necessary.

Summary

The eight *DNP Essentials* are vital to the successful practice of all DNP nurses. The *Essentials* ensure curricula prepare nurses to enhance clinical practice, assure quality patient care, serve as leaders, and advocate for equal and equitable care for all populations served. The DNP prepared nurse must possess an enthusiasm to advance the practice of nursing through critical thinking, problem-solving, collaboration, mentorship, and effective communication. With the *DNP Essentials* as a guide to education and practice, the DNP nurse can make an immense impact on health care delivery systems at the organizational, local, state, national, and international levels.

Chapter Eight: Final Conclusions

This DNP project evaluated the effectiveness of an education session to increase nurses' knowledge and communication skills. The education session provided information on common childhood vaccines and effective communication strategies grounded in motivational interviewing. The DNP project was successful in increasing vaccine knowledge and enhancing the communication skills of immunization nurses at a large health department in Southwestern, NC.

Significance of Findings

Vaccines are one of the most cost-effective methods of infectious disease prevention. Parental concerns related to lack of knowledge have a significant impact on the number of vaccine refusals in the US (McKee & Bohannon, 2016). Nurses, nurse practitioners, and other health care providers' vaccine recommendations are great influencers for parents when making decisions surrounding the vaccination of children.

At the beginning of the DNP project, 22% of the project participants reported extreme comfort with addressing parental vaccine concerns, 67% were somewhat comfortable, and 11% were somewhat uncomfortable. At the completion of the project, 25% of the participants reported extreme comfort with addressing parental vaccine concerns, 50% reported some comfort, and 25% were neutral in their level of comfort or discomfort in addressing parental vaccine concerns. In the post-intervention survey, 50% of the clinic nurses strongly agreed that because of the project, their vaccine knowledge increased, and 50% somewhat agreed to increased vaccine knowledge. Additionally, 50% of the project participants strongly agreed that because of the project, their confidence in communicating about vaccines increased, and 50% somewhat agreed to increased confidence in communication. These findings support the notion

that using an education session to enhance the knowledge and communication skills of nurses is effective.

These findings are significant for future practice in this and other settings seeking to increase knowledge and improve communication to positively affect an outcome. The use of an education session to promote communication confidence and increased knowledge can be used in other areas of healthcare to empower nurses and other providers with the knowledge and skills needed to effectively communicate about a product, service, plan of care, or prevention methods. When nurses and other healthcare providers feel competent and have a sense of relatedness to the work they are performing, more positive outcomes will result.

Project Strengths and Weaknesses

The minimal amount of time and resources that were needed to complete this DNP project was a strength. The simplicity of the design, conducting the education session during a scheduled staff meeting, and having the post-contact questionnaire readily available for completion made the clinic nurses' contributions to the project manageable. Choosing a clinic focused solely on immunization was a strength, as the nurses already had a basic, somewhat enhanced knowledge of the topic; thus, the DNP project only served for clarification, updates, and communication strategies. The project was cost-effective, with the bulk of the cost being in printing and gas for travel. If an organization adopted this DNP project, the organizer would not have to travel as much as the DNP student traveled, and the printing could be done within the organization; thus, decreasing the total cost of the project.

During the planning phase, due to the small size of the immunization team, the DNP student and site champion decided to invite nurses from other programs in the organization that worked with immunizations to participate in the project. The lack of response to the invitation

for participation was a weakness of the project. Not all participants completed the pre- and post-intervention surveys; this, too, served as a weakness in the project. Additionally, the lack of time for further discussion about the nurses' use of the project information was a weakness. A follow-up meeting to discuss the project and use of information would have been beneficial and could have led to an increase in the number of responses to the post-intervention survey.

Project Limitations

The most significant project limitation was the number of participants. Only five nurses participated in the post-session phase of the project, two of which did not get to receive the education until weeks after the initial training. Another significant limitation was the DNP student's limited access to the project site and participants. This limited access was due to participants' time out of the office, the clinic being understaffed, and the clinic's limited hours. There were specialized clinics held to vaccinate school-aged children to prevent exclusion from school for vaccine non-compliance, thus limiting clinic hours during this time. The project site had a one-week period where they held clinics focused on treating school-aged children around the county, and spent a substantial amount of time preparing for these clinics. These specialized clinics were held in other locations and conducted as an organization-wide event; therefore, the DNP student was not allowed to engage participants during this time.

Project Benefits

The use of the education session was successful in increasing the participants' vaccine knowledge and their confidence in communication about vaccines. The increase in knowledge and enhanced communication offers the clinic leadership confidence that patients and families will be adequately educated on vaccines and have their questions and concerns addressed. The

patients seeking care at this immunization clinic will now have more information to make an informed decision about vaccine acceptance or refusal.

Duplication of this project in any healthcare setting is possible at a minimal cost. Organizations can utilize established team members to conduct the education session. The organizational printing budget could cover the printing costs, and holding the post-session follow-up via electronic methods, would aid in cutting costs.

The most significant benefit of this project is employing staff that feels confident and well-equipped for the job they perform. This confidence leads to job satisfaction, which leads to better service to patients and families.

Practice Recommendations

Organization specific recommendations. To ensure nursing staff are well versed in factual vaccine information and are confident in communicating about vaccines, a suggestion for this organization is to implement a standard of routine vaccine education updates. An education session, journal club, poster, electronic mail, or creative reminder around the clinic are compelling ways to deliver systematic education. These updates can be the responsibility of leadership or a staff member.

An additional recommendation would be to utilize the new-hire education notebook created by the DNP student with every new nurse hired for the clinic. This notebook outlines some common concerns of people who are hesitant about or refuse vaccines. The notebook will also provide the new nurse with quick references to valuable resources used to aid in vaccine conversations. A vital aspect of the notebook is the scripts supplied to support nurses in gaining confidence in educating families on recommended childhood vaccines.

Currently, at the primary clinic, once a patient moves from the waiting area, they are brought to a holding area in the clinic, while the nurse continues to review records and prepare vaccines. This area does not provide privacy when interacting with patients. When the nurse is ready to engage the patient, the initial engagement takes place in the holding area. During this interaction, the nurse confirms the patient's name and date of birth, as well as verbalizes the recommended vaccines. This practice violates privacy and poses as a potential barrier to patients or families feeling comfortable voicing concerns about the recommended vaccines.

Universal recommendations. In any setting, informed decision making about care should be the desired outcome for patients. Universally this project process could be used in other clinics in public health departments (i.e., family planning, adult health, refugee clinics). The project idea could be beneficial in the inpatient setting, outpatient setting, and any setting where there is an opportunity to enhance the knowledge and communication skills of team members to provide a more esteemed experience for patients. The project does not have to be specific to the nursing profession. The education session would focus on information specific to the clinic or health care setting, and the staff members would feel more knowledgeable about the content and have increased confidence in communicating with patients.

The need for follow up with post-contact questionnaires may not be necessary if the site's goal is only to provide the education. Some sites may choose to perform the follow-up to determine if the mode of instruction or speaker was effective in changing the practice of the participants. The follow-up information could be beneficial in improving the education or affirming that the process is effective. The follow-up would provide participants the opportunity to identify any barriers to communication with patients in that setting.

Final Summary

Quality assessment and improvement are valuable processes utilized in healthcare to practice evidenced-based care and promote optimal patient outcomes. In dealing with immunizations, adequately informing patients helps with decision making for vaccine uptake. Nurses at the project site make vaccine recommendations for patients and families served. The organization welcomed the DNP student to implement quality improvement as ensuring the nursing staff is well-versed in vaccine information and confident in their communication to address questions and concerns of families was an organizational goal. The DNP student successfully implemented the DNP project to evaluate the effectiveness of using an education session to enhance the knowledge and communication skills of immunization clinic nurses.

Although the DNP student faced some limitations and barriers to the flow of the project, the project was a success and proved valuable to the project site. Project participants reported increased confidence in communication, increased knowledge of vaccines, as well as expressed intention to use information from the project in current and future practice.

A recommendation for future practice for the project site is to routinely use education to increase knowledge and communication skills (i.e., monthly, quarterly, bi-annually, annually). The goal is to provide updated vaccine information to the nurses so they can adequately educate the families served. Other healthcare settings aiming to ensure their staff members are confident in communicating with patients to promote informed decision making and optimal health outcomes can use this DNP project idea to meet that goal.

References

- Allan, N., & Harden, J. (2015; 2014). Parental decision-making in uptake of the MMR vaccination: A systematic review of qualitative literature. *Journal of Public Health (Oxford, England)*, 37(4), 678. doi:10.1093/pubmed/fdu075
- American Association of Colleges of Nursing. (2006). The Essentials of Doctoral Education for Advanced Nursing Practice. Retrieved from <https://www.aacnnursing.org/Portals/42/Publications/DNPEssentials.pdf>
- Ames, H., Njang, D. M., Glenton, C., Fretheim, A., Kaufman, J., Hill, S., . . . Lewin, S. (2015). Mapping how information about childhood vaccination is communicated in two regions of Cameroon: What is done and where are the gaps? *BMC Public Health*, 15(1), 1264. doi:10.1186/s12889-015-2557-9
- Ames, H. M., Glenton, C., & Lewin, S. (2017). Parents' and informal caregivers' views and experiences of communication about routine childhood vaccination: A synthesis of qualitative evidence. *The Cochrane Database of Systematic Reviews*, 2, CD011787.
- Bennett, C. J., Kinney, S., & Mattachione, S. E. (2015). Achieving MHA program alignment using PDSA rapid improvement cycles. *The Journal of Health Administration Education*, 32(3), 359.
- Bowling, A. M. (2018). Immunizations – nursing interventions to enhance vaccination rates. *Journal of Pediatric Nursing*, 42, 126-128. doi:10.1016/j.pedn.2018.06.009
- Brainwaves Video Anthology. (2017, October 17). *Edward Deci-self-determination theory* [Video File]. Retrieved from <https://www.youtube.com/watch?v=m6fm1gt5YAM>
- Butts, J. B. & Rich, K. L. (Eds.). (2015). *Philosophies and theories for advanced nursing practice* (2nd ed.). Burlington, MA: Jones & Bartlett Learning.

Center for Disease Control and Prevention [CDC]. (n.d.). Prevention [PDF file]. Retrieved from https://www.cdc.gov/pictureofamerica/pdfs/picture_of_america_prevention.pdf

Center for Disease Control and Prevention [CDC]. (2016). Common Vaccine Safety Concerns. Retrieved from <https://www.cdc.gov/vaccinesafety/concerns/index.html>

Center for Disease Control and Prevention [CDC]. (2018a). ACIP Recommendations. Retrieved from <https://www.cdc.gov/vaccines/acip/recommendations.html>

Center for Disease Control and Prevention [CDC]. (2018b). Adjuvants Help Vaccines Work Better. Retrieved from <https://www.cdc.gov/vaccinesafety/concerns/adjuvants.html>

Center for Disease Control and Prevention [CDC]. (2018c). Immunization: The Basics. Retrieved from <https://www.cdc.gov/vaccines/vac-gen/imz-basics.htm>

Center for Disease Control and Prevention [CDC]. (2019). Measles Cases and Outbreaks. Retrieved from <https://www.cdc.gov/measles/cases-outbreaks.html>

Chan, J. Y. C., Leung, K. M., Tam, W. W. S., & Lee, A. (2014). Varicella vaccine uptake and associated factors in children in Hong Kong. *Epidemiology and Infection*, *142*(5), 994-1001. doi: <http://dx.doi.org.jproxy.lib.ecu.edu/10.1017/S0950268813001994>

Christoff, P. (2018). Running PDSA cycles. *Current Problems in Pediatric and Adolescent Health Care*, *48*(8), 198-201. doi:10.1016/j.cppeds.2018.08.006

Chung, Y., Schamel, J., Fisher, A., & Frew, P. M. (2017). Influences on immunization decision-making among US parents of young children. *Maternal and Child Health Journal*, *21*(12), 2178-2187. doi:10.1007/s10995-017-2336-6

Cleary, B. A. (2015). Design thinking and PDSA. *The Journal for Quality and Participation*, *38*(2), 21.

Coury, J., Schneider, J. L., Rivelli, J. S., Petrik, A. F., Seibel, E., Dagostini, B., . . . Coronado, G.

D. (2017). Applying the plan-do-study-act (PDSA) approach to a large pragmatic study involving safety net clinics. *BMC Health Services Research, 17*.

doi:<http://dx.doi.org.jproxy.lib.ecu.edu/10.1186/s12913-017-2364-3>

Danchin, M., & Nolan, T. (2014). A positive approach to parents with concerns about

vaccination for the family physician. *Australian Family Physician, 43*(10), 690-694.

Davis, M. (2019). 'Globalist war against humanity shifts into high gear': Online anti-vaccination

websites and 'anti-public' discourse. *Public Understanding of Science, 28*(3), 357-371.

doi:10.1177/0963662518817187

Delkhosh, M., Negarandeh, R., Ghasemi, E., & Rostami, H. (2014). Maternal concerns about

immunization over 0-24 month children: A qualitative research. *Issues in Comprehensive*

Pediatric Nursing, 37(4), 235-249. doi:10.3109/01460862.2014.951131

Dube, E., Vivion, M., & MacDonald, N. E. (2015). Vaccine hesitancy, vaccine refusal and the

anti-vaccine movement: influence, impact and Implications. *Expert review of*

vaccines, 14(1), 99-117. doi: 10.1586/14760584.2015.964212

Evrony, A., & Caplan, A. (2017). The overlooked dangers of anti-vaccination groups' social

media presence. *Human Vaccines & Immunotherapeutics, 13*(6), 1475-1476.

doi:10.1080/21645515.2017.1283467

Forbes, T. A., McMinn, A., Crawford, N., Leask, J., & Danchin, M. (2015). Vaccination uptake

by vaccine-hesitant parents attending a specialist immunization clinic in

Australia. *Human Vaccines & Immunotherapeutics, 11*(12), 2895-2903.

doi:10.1080/21645515.2015.1070997

- Fournet, N., Mollema, L., Ruijs, W. L., Harmsen, I. A., Keck, F., Durand, J. Y., . . . van Steenbergen, J. E. (2018). Under-vaccinated groups in Europe and their beliefs, attitudes and reasons for non-vaccination; two systematic reviews. *BMC Public Health, 18*(1), 196-17. doi:10.1186/s12889-018-5103-8
- Freed, G. L., & Turbitt, E. (2016). The global imperative to address vaccine-preventable diseases. *Australian Family Physician, 45*(1/2), 14-16.
- Fukada, M. (2018). Nursing competency: Definition, structure and development. *Yonago Acta Medica, 61*(1), 1.
- Gagneur, A., Gosselin, V., & Dubé, È. (2018). Motivational interviewing: A promising tool to address vaccine hesitancy. *Vaccine, 36*(44), 6553-6555.
doi:10.1016/j.vaccine.2017.10.049
- Glanz, J. M., Kraus, C. R., & Daley, M. F. (2015). Addressing parental vaccine concerns: Engagement, balance, and timing. *PLoS Biology, 13*(8), e1002227.
doi:10.1371/journal.pbio.1002227
- Hagan, D., & Phethlu, D. R. (2016). Determinants of parents' decisions on childhood immunisations at Kumasi Metropolis in Ghana. *Curationis, 39*(1), e1-e10.
doi:10.4102/curationis.v39i1.1554
- Hancox, J. E., Quested, E., Ntoumanis, N., & Thøgersen-Ntoumani, C. (2018). Putting self-determination theory into practice: Application of adaptive motivational principles in the exercise domain. *Qualitative Research in Sport, Exercise and Health, 10*(1), 75-91.
doi:10.1080/2159676X.2017.1354059
- HealthyPeople.gov. (2019a). Access to Health Services. Retrieved from
<https://www.healthypeople.gov/2020/topics-objectives/topic/Access-to-Health-Services>

HealthyPeople.gov (2019b). Health Communication and Health Information Technology.

Retrieved from <https://www.healthypeople.gov/2020/topics-objectives/topic/health-communication-and-health-information-technology>

HealthyPeople.gov. (2019c). Immunization and Infectious Diseases. Retrieved from

<https://www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases>

Henrikson, N. B., Opel, D. J., Grothaus, L., Nelson, J., Scrol, A., Dunn, J., ... Grossman, D. C.

(2015). Physician communication training and parental vaccine hesitancy: A randomized trial. *Pediatrics*, *136*(1), 70-79. doi:10.1542/peds.2014-3199

Herath, N. C., Kudagammana, T., Sanathchandra, T. T., Gamage, H. K., Razik, I. M., &

Liynapathirana, V. (2018). Brief report: Parental attitudes and knowledge on routine childhood immunization: An experience from central Sri Lanka. *BMC Research Notes*, *11*(1), 402-018-3519-y. doi:10.1186/s13104-018-3519-y

Hsu, L., Huang, Y., & Hsieh, S. (2014). The effects of scenario-based communication training

on nurses' communication competence and self-efficacy and myocardial infarction knowledge. *Patient Education and Counselling*, *95*(3), 356-364. doi:10.1016/j.pec.2014.03.010

Institute for Healthcare Improvement [IHI]. (2019). How to Improve. Retrieved from

<http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementTestingChanges.aspx>

Jain, A., Marshall, J., Buikema, A., Bancroft, T., Kelly, J. P., & Newschaffer, C. J. (2015).

Autism occurrence by MMR vaccine status among US children with older siblings with and without autism. *JAMA*, *313*(15), 1534-1540. doi:10.1001/jama.2015.3077

- Johnson, S., & Capdevila, R. (2014). 'That's just what's expected of you ... so you do it': Mothers discussions around choice and the MMR vaccination. *Psychology & Health, 29*(8), 861-876. doi:10.1080/08870446.2014.892940
- Kestenbaum, L. A., & Feemster, K. A. (2015). Identifying and addressing vaccine hesitancy. *Pediatric Annals, 44*(4), e71-75.
doi:http://dx.doi.org.jproxy.lib.ecu.edu/10.3928/00904481-20150410-07
- Kroger, A. T., Duchin, J, Vázquez, M. (2017). General Best Practice Guidelines for Immunization. Best Practices Guidance of the Advisory Committee on Immunization Practices (ACIP). Retrieved from www.cdc.gov/vaccines/hcp/acip-recs/general-recs/downloads/general-recs.pdf.
- Lehmann, B. A., de Melker, H. E., Timmermans, D. R. M., & Mollema, L. (2017). Informed decision making in the context of childhood immunization. *Patient Education and Counseling, 100*(12), 2339-2345. doi:S0738-3991(17)30361-0
- MacDonald, N. E., Butler, R., & Dube, E. (2018). Addressing barriers to vaccine acceptance: An overview. *Human Vaccines & Immunotherapeutics, 14*(1), 218-224.
doi:10.1080/21645515.2017.1394533
- Mallory, M. L., Lindesmith, L. C., & Baric, R. S. (2018). Vaccination-induced herd immunity: Successes and challenges. *The Journal of Allergy and Clinical Immunology, 142*(1), 64-66. doi:10.1016/j.jaci.2018.05.007
- McHale, P., Keenan, A., & Ghebrehewet, S. (2016). Reasons for measles cases not being vaccinated with MMR: Investigation into parents' and carers' views following a large measles outbreak. *Epidemiology and Infection, 144*(4), 870-875.
doi:10.1017/S0950268815001909

McKee, C. & Bohannon, K. (2016). Exploring the reasons behind parental refusal of vaccines.

The Journal of Pediatric Pharmacology and Therapeutics, 21(2), 104 – 109.

doi:10.5863/1551-6776-21.2.104.

MedlinePlus. (2019). Types of Health Care Providers. Retrieved from

<https://medlineplus.gov/ency/article/001933.htm>

Melnyk, B. M. (2016). Improving healthcare quality, patient outcomes, and costs with evidence-

based practice. *Reflections on Nursing Leadership*. Retrieved from

[https://www.reflectionsonnursingleadership.org/features/more-](https://www.reflectionsonnursingleadership.org/features/more-features/Vol42_3_improving-healthcare-quality-patient-outcomes-and-costs-with-evidence-based-practice)

[features/Vol42_3_improving-healthcare-quality-patient-outcomes-and-costs-with-](https://www.reflectionsonnursingleadership.org/features/more-features/Vol42_3_improving-healthcare-quality-patient-outcomes-and-costs-with-evidence-based-practice)

[evidence-based-practice](https://www.reflectionsonnursingleadership.org/features/more-features/Vol42_3_improving-healthcare-quality-patient-outcomes-and-costs-with-evidence-based-practice)

Miller, K. A., Hillier, D., Russ, C., Luercio, M., & Winn, A. S. (2019). Applying self-

determination theory to redesign an inpatient care team. *Academic Pediatrics*, 19(3), 351-

353. doi:10.1016/j.acap.2018.09.010

Murray, A., Hall, A. M., Williams, G. C., McDonough, S. M., Ntoumanis, N., Taylor, I. M., . . .

Lonsdale, C. (2015). Effect of a self-determination theory–based communication skills

training program on physiotherapists' psychological support for their patients with

chronic low back pain: A randomized controlled trial. *Archives of Physical Medicine and*

Rehabilitation, 96(5), 809-816. doi:10.1016/j.apmr.2014.11.007

My, C., Danchin, M., Willaby, H. W., Pemberton, S., & Leask, J. (2017). Parental attitudes,

beliefs, behaviours and concerns towards childhood vaccinations in Australia: A national

online survey. *Australian Family Physician*, 46(3), 145-151.

Napier, G., Lee, D., Robertson, C., Lawson, A., & Pollock, K. G. (2016). A model to estimate

the impact of changes in MMR vaccine uptake on inequalities in measles susceptibility in

Scotland. *Statistical Methods in Medical Research*, 25(4), 1185-1200.

doi:10.1177/0962280216660420

National Cancer Institute. (n.d.). Cancer Causes and Prevention. Retrieved from

<https://www.cancer.gov/about-cancer/causes-prevention>

National Institute of Allergy and Infectious Diseases [NIAID]. (2014). Vaccine Benefits.

Retrieved from <https://www.niaid.nih.gov/research/vaccine-benefits>

Philips, L., Young, J., Williams, L. A., Cooke, M., & Rickard, C. (2014). Opportunistic immunisation in the emergency department: A survey of staff knowledge, opinion and practices. *Australasian Emergency Nursing Journal*, 17(2), 44-50.

doi:10.1016/j.aenj.2013.12.003

Phillips, A., Beard, F., Macartney, K., Chan, J., Gilmour, R., Saravanos, G., & McIntyre, P.

(2018). Vaccine-preventable child deaths in New South Wales from 2005 to 2014: How much is preventable?: Vaccine-preventable child deaths. *Journal of Paediatrics and Child Health*, 54(4), 356-364. doi:10.1111/jpc.13835

Plotkin, S. (2014). History of vaccination. *Proceedings of the National Academy of Sciences of the United States of America*, 111(34), 12283-12287. doi:10.1073/pnas.1400472111

Positive Psychology Program. (2019). What is the Self-Determination Theory of Motivation?

Retrieved from <https://positivepsychologyprogram.com/self-determination-theory/>

Ramoo, V., Abdullah, K. L., Tan, P. S., Wong, L. P., & Chua, P. Y. (2016). Intervention to improve intensive care nurses' knowledge of sedation assessment and management. *Nursing in Critical Care*, 21(5), 287-294. doi:10.1111/nicc.12105

Reno, J. E., O'Leary, S., Garrett, K., Pyrzanowski, J., Lockhart, S., Campagna, E., et al. (2018).

Improving provider communication about HPV vaccines for vaccine-hesitant parents

- through the use of motivational interviewing. *Journal of Health Communication*, 23(4), 313-320.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68-78. doi:10.1037/0003-066X.55.1.68
- Schutter, D. (2017). T028 efficacy is not equal to effectiveness: Transcranial magnetic stimulation in the treatment of depressive disorder. *Clinical Neurophysiology*, 128(3), e8-e8. doi:10.1016/j.clinph.2016.10.126
- Self-Determination Theory. (2019). Theory. Retrieved from <http://selfdeterminationtheory.org/theory/>
- Shibli, R., Rishpon, S., Cohen-Dar, M., & Kandlik, Y. (2019). What affects pediatric healthcare providers to encourage receipt of routine childhood vaccinations? results from the northern district of Israel, 2016. *Vaccine*, 37(3), 524-529. doi:10.1016/j.vaccine.2018.11.051
- Taylor, L. E., Swerdfeger, A. L., & Eslick, G. D. (2014). Vaccines are not associated with autism: An evidence-based meta-analysis of case-control and cohort studies. *Vaccine*, 32(29), 3623-3629. doi:10.1016/j.vaccine.2014.04.085
- Taylor, M. J., McNicolas, C., Nicolay, C., Darzi, A., Bell, D., & Reed, J. E. (2014). Systematic review of the application of the plan–do–study–act method to improve quality in healthcare. *BMJ Qual Saf*, 23, 290–298. doi:10.1136/bmjqs-2013-001862
- The Editors of The Lancet. (2010). Retraction—Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children. *The Lancet*, 375(9713), 445-445. doi:10.1016/S0140-6736(10)60175-4

Wade, G. H. (2014). Nurses as primary advocates for immunization adherence. *MCN, the American Journal of Maternal/Child Nursing*, 39(6), 351-356.

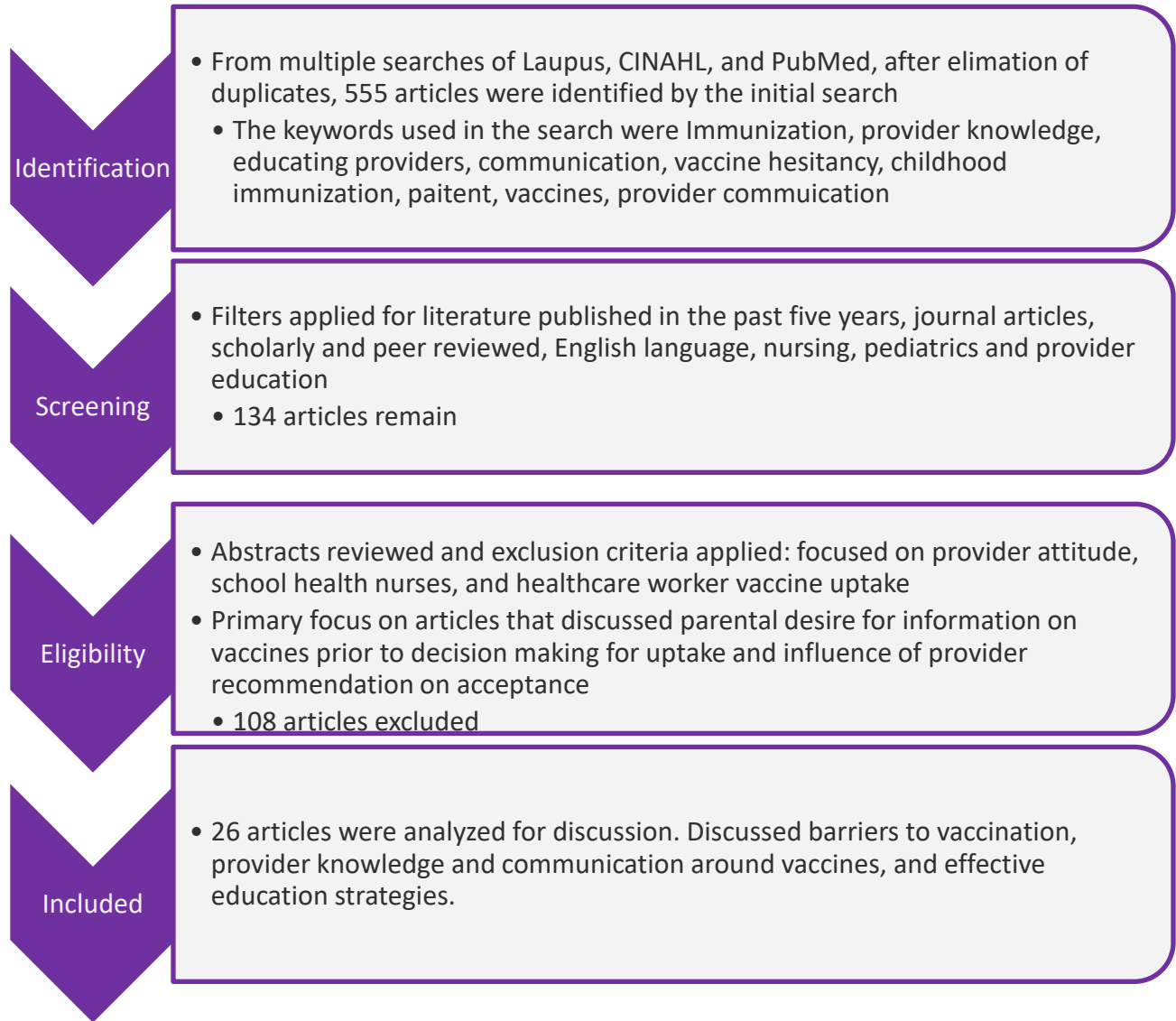
doi:10.1097/NMC.0000000000000083

World Health Organization [WHO]. (2018). Immunization Coverage. Retrieved from <https://www.who.int/en/news-room/fact-sheets/detail/immunization-coverage>

World Health Organization [WHO]. (2019). Immunization, Vaccines, and Biologicals. Retrieved from https://www.who.int/immunization/quality_safety/en/

Appendix A

Literature Search Flow Diagram



Appendix B

Literature Matrix

Student: Julia Banks		Date of Submission: March 15, 2019		
Faculty: Dr. Helene Reilly				
Project Title: Preparing Healthcare Providers for Vaccine Discussions				
Article (APA Citation)	Level of Evidence (I to VII)	Data/Evidence Findings	Conclusion or Summary	Use of Evidence in EBP Project Plan <i>(Include your evaluation, strengths/limitations, and relevance to your project <u>and</u> other information that you would like to make note of)</i>
Allan, N., & Harden, J. (2015; 2014). Parental decision-making in uptake of the MMR vaccination: A systematic review of qualitative literature. <i>Journal of Public Health (Oxford, England)</i> , 37(4), 678.	Level V	All studies revealed: parental concern about MMR and its potential adverse effects. Reasons reported belief that MMR was unsafe: ingredients, link with autism, and immune stress	communication needs to be tailored to address the concerns of parents.	Methods: systematic literature review, reviewed articles that discussed Wakefield and the linkage of MMR to autism. limitations: lack of access to primary sources, studies had different methods of data collection, lack of clarity provided in the articles that set acceptors apart from rejectors. Project relevance: supports need to tailor communication to address the vaccine concerns of parents

<p>Ames, H., Njang, D. M., Glenton, C., Fretheim, A., Kaufman, J., Hill, S., et al. (2015). Mapping how information about childhood vaccination is communicated in two regions of Cameroon: What is done and where are the gaps? <i>BMC Public Health</i>, 15, 1264-015-2557-9. doi:10.1186/s12889-015-2557-9</p>	<p>Level VI</p>	<p>Identified categories of interventions being used for vaccine communication. Most focused on national campaigns, target communities broadly, rather than parents, very few target health care workers. Most interventions aimed to inform and educate or remind and call</p>	<p>Developed map of interventions being used in 2 regions of Cameroon. Identified areas where efforts could be made to consider how caregiver's communication needs could be better addressed.</p>	<p>Methods: interviews with program managers, non-governmental organizations, vaccinators, parents and community members, observations and informal conversations, and survey to parents and caregivers, and document analysis. Limitations: conducted during a polio epidemic when a lot of focus was on the epidemic, this could have influenced the responses, data relies on participant report and observation, making it susceptible to recall bias. Project relevance: supports health care worker and governmental agencies informing and educating parents and addressing their concerns via effective communication</p>
<p>Ames, H. M., Glenton, C., & Lewin, S. (2017). Parents' and informal caregivers' views and experiences of communication about routine childhood vaccination: A synthesis of qualitative evidence. <i>The Cochrane Database of Systematic Reviews</i>, 2, CD011787.</p>	<p>Level V</p>	<p>Parent reported desire for more vaccine info, balanced info, viewed health care workers as important source of info, and difficulty knowing which source to trust,</p>	<p>Trial interventions addressed communication including tailoring info to the parents' needs. No interventions addressed negative media or addressed parental perceptions of health worker motives.</p>	<p>Method: systematic review of 38 studies to discover parents' views and experiences of communication about routine childhood vaccines. Limitations: studies were only from high income countries. Project relevance: be knowledgeable of negative media in case that is an expressed concern of parents, supports tailoring info communicated to parents needs</p>

<p>Bowling, A. M. (2018). Immunizations – nursing interventions to enhance vaccination rates. <i>Journal of Pediatric Nursing</i>, 42, 126-128.</p>	<p>Level VII</p>	<p>Interventions discussed: focused education, address parental concerns, involving parents in decision making for vaccine uptake, consider alternative vaccine schedules, focus on increasing vaccine rates</p>	<p>Addressed vaccine hesitancy and risk for resurgence of vaccine preventable diseases Stress importance nurse play in providing anticipatory guidance and education about vaccine safety and promoting vaccine uptake</p>	<p>Discussed nurse's social responsibility to protect, promote, and optimize health by lobbying at the legislative level. Encouraged guidelines be in place in situations where exemptions are enacted.</p>
<p>Center for Disease Control and Prevention [CDC]. (2016). Common Vaccine Safety Concerns. Retrieved from https://www.cdc.gov/vaccinesafety/concerns/index.html</p>	<p>Gray Literature</p>	<p>Addresses common questions about vaccine safety to include specific info on: adjuvants, autism, fainting, febrile seizures, Guillain-Barre Syndrome, SIDS, thimerosal, multiple administration, pregnancy, recalls, and historical safety</p>	<p>Reviews common concerns related to vaccines</p>	<p>CDC Website. Federal agency that supports health promotion, prevention, and preparedness activities in the US. Goal to improve overall health.</p>
<p>Center for Disease Control and Prevention [CDC]. (2018a). ACIP recommendations. https://www.cdc.gov/vaccines/acip/recommendations.html</p>	<p>Gray Literature</p>	<p>Discusses the ACIP recommendations on how to use vaccines to control disease in the US</p>	<p>Overview of the Advisory Committee on Immunization Practices (ACIP)</p>	<p>CDC Website. Federal agency that supports health promotion, prevention, and preparedness activities in the US. Goal to improve overall health. Has link to full recommendations and immunization schedules. Provides overview of the most recent meeting recommendations so consumers can see what has been updated.</p>

<p>Center for Disease Control and Prevention [CDC]. (2018c). Autism Spectrum Disorder (ASD). Retrieved from https://www.cdc.gov/ncbddd/autism/topics.html</p>	<p>Gray Literature</p>	<p>Reports no link of vaccines to autism</p>	<p>Addresses the question: Do vaccines cause autism spectrum disorder (ASD)?</p>	<p>CDC Website. Federal agency that supports health promotion, prevention, and preparedness activities in the US. Goal to improve overall health. Provides link to immunization safety office,</p>
<p>Center for Disease Control and Prevention [CDC]. (2019). Measles Cases and Outbreaks. Retrieved from https://www.cdc.gov/measles/cases-outbreaks.html</p>	<p>Gray Literature</p>	<p>from 1/1/19 to 3/7/19 228 cases of measles have been confirmed in 12 states. Defines outbreak: 3 or more cases reported.</p>	<p>Provides overview of measles cases and outbreaks</p>	<p>CDC Website. Federal agency that supports health promotion, prevention, and preparedness activities in the US. Goal to improve overall health. Provides info on measles cases from previous years</p>
<p>Chan, J. Y. C., Leung, K. M., Tam, W. W. S., & Lee, A. (2014). Varicella vaccine uptake and associated factors in children in Hong Kong. <i>Epidemiology and Infection</i>, 142(5), 994-1001. doi:http://dx.doi.org/proxy.lib.ecu.edu/10.1017/S0950268813001994</p>	<p>Level VI</p>	<p>1285 questionnaires completed by parents of kindergarteners, top 3 factors that influenced choice to vaccinate were recommendation by a family doctor, specialist, or healthcare professional in school, reasons for not vaccinating were unsure of effects, no recommendations from government, and no recommendation from doctors</p>	<p>although increased, varicella vaccine rates are still below the rate of countries that have universal vaccination programs, recommendations from family doctors and healthcare professionals in schools were major factors affecting uptake. Among those who did not vaccinate, the most frequent barrier reported was uncertainty</p>	<p>Method: explored varicella vaccine rate and parental barriers against varicella vaccine through questionnaire conducted with parent of 15 Kindergartners in Hong Kong Limitations: study skewed toward families with higher education and did not account for the missing population of the children who were not in school but the same age, as well as validity of self-reporting. Project relevance: to address barriers health care professionals need to enhance education on vaccines and the disease</p>

			<p>regarding effectiveness, lack of recommendation, and side effects</p>	<p>burden of varicella in the community</p>
<p>Chung, Y., Schamel, J., Fisher, A., & Frew, P. M. (2017). Influences on immunization decision-making among US parents of young children. <i>Maternal and Child Health Journal</i>, 21(12), 2178-2187. doi:10.1007/s10995-017-2336-6</p>	<p>Level VI</p>	<p>information gathered revealed doctors, nurses, and health care personnel have influence in parental decision making around vaccinations. Data: A <i>doctor, nurse, or HCP</i> made me "more likely" or less likely to vaccinate. Doctor influence 94.1% more likely, 5.9% less likely, Nurse Influence 87.3% more likely, 5.9% less likely, other HCP influence 78.6% more likely, 21.4% less likely</p>	<p>need to develop communication interventions for providers supported with evidence, this may increase the effectiveness of patient-provider discussions</p>	<p>Method: surveys to determine why parents chose which provider they chose based on the practices vaccine policy, also looked at how providers and nurses and other health personnel influenced decision to vaccinate or not Limitations: information was gathered via self-reporting, possibility of recall bias and social desirability bias. Attitudes and experiences may not be fully generalizable, questions changed during the 2-yr gap b/t the surveys. Relevance to project: supports the educational needs of healthcare providers around vaccines as provider trust and communication are</p>

				key factors in parental decision-making regarding vaccines.
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<p>Danchin, M., & Nolan, T. (2014). A positive approach to parents with concerns about vaccination for the family physician. <i>Australian Family Physician</i>, 43(10), 690-694.</p>	<p>Level VI</p>	<p>Using the principles of motivational interviewing, where a guiding rather than a directing style is used to develop an empathic relationship with the individual, the individual's responsiveness and motivation for change can be assessed. Table with suggestion communication approaches for vaccine hesitant and refusing parents.</p>	<p>To effectively address vaccine hesitancy in the Australian context, at a time when concerns about vaccines and their safety predominate over concerns about the risk of the vaccine-preventable diseases, it is clear that effective communication strategies for healthcare providers to undertake discussions with vaccine-hesitant families are the way forward. These discussions can occur in both the primary and secondary care setting along the continuum of parental vaccine decision-making, from the prenatal to the postnatal period and beyond.</p>	<p>mentioned hypothetical association between MMR and autism as one of the most frequently stated concerns by vaccine-hesitant parents despite the causal relationship being refuted. Limitations: does not tell where they collected the information to develop the suggested communication approaches</p>
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<p>Delkhosh, M., Negarandeh, R., Ghasemi, E., & Rostami, H. (2014). Maternal concerns about immunization over 0-24 month children: A qualitative research. <i>Issues in Comprehensive Pediatric Nursing</i>, 37(4), 235-249. doi:10.3109/01460862.2014.951131</p>	<p>Level V</p>	<p>identified 5 categories that influence parental concern with vaccines: factors that cause concerns, factors that influence concerns, information, education, and communication barriers, informational/educational needs and sources, and necessity of childhood vaccines.</p>	<p>Controlling parental concerns about immunizations is the best approach for success in immunization programs. Health care personnel need adequate education and be prepared to deal with concerns, communication issues, and provide a variety of vaccine information based on need.</p>	<p>Method: qualitative study collecting data via interviews and analyzing content to determine concerns of mothers of 0-24 month in South Tehran Limitations: participants are only representative of parents who use the public health center for immunizations, not generalized to all levels of society. Interviews were interrupted by distractions from children, breaking the mother's focus, interviewers had trouble with understanding the mother's with heavy accents. Relevance to project: the categories can be used as guidance to develop common communication on specific topics to address parental concerns</p>
<p>Forbes, T. A., McMinn, A., Crawford, N., Leask, J., & Danchin, M. (2015). Vaccination uptake by vaccine-hesitant parents attending a specialist immunization clinic in Australia. <i>Human Vaccines & Immunotherapeutics</i>, 11(12), 2895-2903. doi:10.1080/21645515.2015.1070997</p>	<p>Level IV</p>	<p>VH cohort: 34% were hesitant, 55% late/selective, and 11% refused. Most commonly omitted vaccine was Hep B</p>	<p>Tailored communication based on parental position on vaccines can optimize resources and family engagement</p>	<p>Method: retrospective descriptive study divided participants into 3 cohorts based on parents' position on immunizations. Limitations: when records unavailable parents were contact which could produce recall bias, also retrospective design. Relevance to project: could use the info from this study to determine which vaccines hesitant parents are concerned about.</p>

<p>Fournet, N., Mollema, L., Ruijs, W. L., Harmsen, I. A., Keck, F., Durand, J. Y., . . . van Steenberg, J. E. (2018). Under-vaccinated groups in Europe and their beliefs, attitudes and reasons for non-vaccination; two systematic reviews. <i>BMC Public Health</i>, 18(1), 196-17. doi:10.1186/s12889-018-5103-8</p>	<p>Level V</p>	<p>review of a total of 61 articles to determine reasons given by unvaccinated groups for not receiving vaccines, top 3 reasons: perceived non-severity, fear of side-effects, and need for more information about the vaccines</p>	<p>Communication strategies toward educating people about the associated risks of vaccinations vs not being vaccinated, addressing concerns, and countering myths along with building a trusted relationship can increase vaccine uptake</p>	<p>Methods: systematic literature review focused on understanding factors related to acceptance of vaccines. limitations: English language only, limited info that could have been obtained from the countries where the UVGs live. Restricted search to vaccination and immunization in MeSH and title and/or abstract. Did not include articles discussing religious attitudes toward vaccines. Relevance to project: promotion of effective communication between HCP and patient</p>
<p>Gagneur, A., Gosselin, V., & Dubé, È. (2018). Motivational interviewing: A promising tool to address vaccine hesitancy. <i>Vaccine</i>, 36 (44), 6553-6555. doi:10.1016/j.vaccine.2017.10.049</p>	<p>Level VII</p>	<p>PromoVac strategy using a motivational interviewing approach was effective in increasing vaccine uptake and decreasing VH.</p>	<p>Overview of motivational interviewing to address vaccine hesitancy</p>	<p>Relevance to project: promotes enhancing provider communication skills to positively impact vaccine acceptance</p>

<p>Henrikson, N. B., Opel, D. J., Grothaus, L., Nelson, J., Scrol, A., Dunn, J., et al. (2015). Physician communication training and parental vaccine hesitancy: A randomized trial. <i>Pediatrics</i>, 136(1), 70-79. doi:10.1542/peds.2014-3199</p>	<p>Level II</p>	<p>Intervention had no detectable effect on maternal vaccine hesitancy, adjusted odds ratio 1.22, or significant difference in provider reported enhanced self-efficacy</p>	<p>Did not find significant evidence that physician communication training reduces vaccine hesitance or enhances provide self-efficacy</p>	<p>Method: RCT, physician targeted communication training, enrolled mothers of newborns and mothers and physicians were surveyed at baseline and 6 mos. Limitations: training was not congruent in method, some physicians completed online training and some attended face to face training, unsure of how many physicians attended online, therefore mothers may have been educated by a physician who did not complete the training. Relevance to project: it's possible that provider targeted education will not significantly impact VH or provider self-efficacy</p>
<p>Herath, N. C., Kudagammana, T., Sanathchandra, T. T., Gamage, H. K., Razik, I. M., & Liynapathirana, V. (2018). Brief report: Parental attitudes and knowledge on routine childhood immunization: An experience from central Sri Lanka. <i>BMC Research Notes</i>, 11(1), 402-018-3519-y. doi:10.1186/s13104-018-3519-y</p>	<p>Level IV</p>	<p>53% of parents accompanying children to a routine clinic had average or above average knowledge in general but lacked vaccine specific knowledge</p>	<p>Medical professionals need to be more engaging, parental lack of knowledge contributes to vaccine hesitancy and leaves parents vulnerable to mis-information</p>	<p>Method: questionnaire used to elicit info about parent's knowledge, attitudes, practices, and concerns, analyzed through descriptive statistics. Limitations: small sample size, custom developed questionnaire, no in-depth assessment of reason for resisting vaccines. Relevance to project: supports notion that parental knowledge is associated with acceptance or refusal of vaccines, supports HCPs being more engaged in vaccine conversations to meet parental needs.</p>

<p>Hsu, L., Huang, Y., & Hsieh, S. (2014). The effects of scenario-based communication training on nurses' communication competence and self-efficacy and myocardial infarction knowledge. <i>Patient Education and Counselling</i>, 95(3), 356-364.</p>	<p>Level II</p>	<p>scenario based group more satisfied with their training and reported more increased self-efficacy</p>	<p>scenario based communication training is more effective in enhancing competence and self-efficacy</p>	<p>Method: RCT, pre and posttest, experimental group underwent simulated communication training, control group received case-based communications training. Limitations: site: regional hospital, may not be generalizable, block randomization conducted before informed consent, data analyzed by protocol vs intent to treat, risking losing strengths of randomization. Relevance to project: scenario-based communication is more effective, this is one aspect of the proposed intervention for the project</p>
<p>Jain, A., Marshall, J., Buikema, A., Bancroft, T., Kelly, J. P., & Newschaffer, C. J. (2015). Autism occurrence by MMR vaccine status among US children with older siblings with and without autism. <i>Jama</i>, 313(15), 1534-1540.</p>	<p>Level IV</p>	<p>6.9% of children with an older sibling with ASD were diagnosed with ASD and no association to the MMR vaccine was proven</p>	<p>no association between receipt of MMR vaccine and increased risk for ASD</p>	<p>Method: A retrospective cohort study using an administrative claims database to determine if children who have older siblings with ASD are more or less likely to get ASD when vaccinated with MMR. Limitations: review of insurance claims, dx that do not affect payment are under reported. Relevance to project: will provide info to participants refuting claims of MMR causing autism.</p>

<p>Johnson, S., & Capdevila, R. (2014). 'That's just what's expected of you ... so you do it': Mothers discussions around choice and the MMR vaccination. <i>Psychology & Health</i>, 29(8), 861-876. doi:10.1080/08870446.2014.892940</p>	<p>Level VI</p>	<p>categories for determining MMR decisions: sourcing advice and info, "mother knows best", and negotiating agency</p>	<p>covered different sources of advice to parents, determined that mother's do go with instinct despite advice given, and knowledge about vaccines is decreased in mothers</p>	<p>Method: a review of literature to determine mother's discussion around choice and the MMR vaccine. Limitations: small sample size. Application to practice: discussed sources of information and influence on parental decision to vaccinate</p>
<p>Kestenbaum, L. A., & Feemster, K. A. (2015). Identifying and addressing vaccine hesitancy. <i>Pediatric Annals</i>, 44(4), e71-75. doi:http://dx.doi.org.proxy.lib.ecu.edu/10.3928/00904481-20150410-07</p>	<p>Level I</p>	<p>majority of methods explored for addressing vaccine hesitancy focuses on provider-parent relationship</p>	<p>explored history of vaccine hesitance, its causes, and suggested approaches for reducing hesitancy and strengthening vaccine acceptance</p>	<p>Method: defined hesitancy, discussed factors contributing, role of public health, social norms and parental responsibility, trust, role of health professionals, religious beliefs, and interventions to address hesitancy. Limitations: need more focused review of interventions. Relevance to project: can use the information to inform participants as well as it supports provider trust and communication to address hesitancy</p>

<p>Kroger, A. T., Duchin, J, Vázquez, M. (2017). General Best Practice Guidelines for Immunization. Best Practices Guidance of the Advisory Committee on Immunization Practices (ACIP). Retrieved from www.cdc.gov/vaccines/hcp/acip-recs/general-recs/downloads/general-recs.pdf.</p>	<p>Gray Literature</p>	<p>Reviews best practice guidelines of the ACIP.</p>	<p>Overview of general best practice guidelines for immunizations</p>	<p>CDC Website. Federal agency that supports health promotion, prevention, and preparedness activities in the US. Goal to improve overall health. Provided printer friendly version of ACIP recommendations</p>
<p>Lehmann, B. A., de Melker, H. E., Timmermans, D. R. M., & Mollema, L. (2017). Informed decision making in the context of childhood immunization. <i>Patient Education and Counseling</i>, 100(12), 2339-2345. doi: S0738-3991(17)30361-0</p>	<p>Level IV</p>	<p>77% of parents had sufficient knowledge, 34% made deliberate decisions, 94% were value consistent</p>	<p>parents are making uninformed decisions regarding childhood vaccines; further research is needed to investigate possibilities in increasing knowledge and trust in information provided</p>	<p>Method: random selection for online questionnaire measuring informed decision making. Limitations: the measures were dichotomized and treated as equally important for parent decisions, education material developed without consideration for the consumer, possible response bias. Relevance to project: parents commonly make uninformed decisions about childhood vaccines, HCPs are a valuable source of info to aid parents in informed decision making</p>

<p>MacDonald, N. E., Butler, R., & Dube, E. (2018). Addressing barriers to vaccine acceptance: An overview. <i>Human Vaccines & Immunotherapeutics</i>, 14(1), 218-224. doi:10.1080/21645515.2017.1394533</p>	<p>Level VII</p>	<p>Strategies: program focused or individual focused</p>	<p>overcoming hesitancy, diagnosis and tailored intervention as there is no simple strategy that can address all of the barriers to vaccine acceptance</p>	<p>Relevance to project: Immunization program managers and health care workers need to become adept at recognizing and tackling hesitancy, discusses evidence-informed strategies to achieve these goals.</p>
<p>Mallory, M. L., Lindesmith, L. C., & Baric, R. S. (2018). Vaccination-induced herd immunity: Successes and challenges. <i>The Journal of Allergy and Clinical Immunology</i>, 142(1), 64-66.</p>	<p>Level VII</p>	<p>Biological and societal factors affecting vaccine-induced population immunity: public policy, access, underdeveloped immunity in young, stereotypes, pathogen epitope stability, and population immune competence.</p>	<p>Discussion of herd immunity</p>	<p>unvaccinated usually include young children and immunocompromised</p>
<p>McHale, P., Keenan, A., & Ghebrehewet, S. (2016). Reasons for measles cases not being vaccinated with MMR: Investigation into parents' and carers' views following a large measles outbreak. <i>Epidemiology and Infection</i>, 144(4), 870-875. doi:10.1017/S0950268815001909</p>	<p>Level IV</p>	<p>concerns over links between vaccine and autism remained and negatively affects acceptance of vaccines</p>	<p>Safety concerns remain a major barrier to the MMR vaccine</p>	<p>Method: semi-structured phone interview with caregivers of unvaccinated children for the MMR vaccine. Limitations: questionnaire not specific, lacked detailed analysis of reasons provided, potential for overstatement bias d/t children had recently gotten over the measles. Relevance to project: parents report access to services and vaccine information to be inadequate.</p>

<p>National Institute of Allergy and Infectious Diseases [NIAID]. (2014). Vaccine Benefits. Retrieved from https://www.niaid.nih.gov/research/vaccine-benefits</p>	<p>Gray Literature</p>	<p>specifically discusses impact of vaccines in the US and vaccine benefits to you and others,</p>	<p>Provides overview of vaccine benefits</p>	<p>National agency that leads research to understand, treat, and prevent infectious, immunologic, and allergic diseases.</p>
<p>Plotkin, S. (2014). History of vaccination. Proceedings of the National Academy of Sciences of the United States of America, 111(34), 12283-12287.</p>	<p>Level VII</p>	<p>Discusses differences and evolution of vaccine development and the different categories and components of vaccines.</p>	<p>Overview of hx of vaccinations</p>	<p>provides timeline for development of human vaccines</p>
<p>Ramoo, V., Abdullah, K. L., Tan, P. S., Wong, L. P., & Chua, P. Y. (2016). Intervention to improve intensive care nurses' knowledge of sedation assessment and management. Nursing in Critical Care, 21(5), 287-294.</p>	<p>Level III</p>	<p>Significant increases in overall mean knowledge scores. Nurses with less experience and younger with a basic nursing education had the largest improvement in knowledge with mean differences of 24.62 (p=0.001), 23.81 (p=0.027), and 27.5 (p=0.0001)</p>	<p>Educational session with theoretical sessions and hands on practice was effective in improving knowledge and understanding</p>	<p>Method: quasi experimental design with pre and posttest with educational intervention that included theoretical sessions related to area of work. Limitations: assess a single unit from a single hospital, not generalizable. Relevance to project: same type of design and intervention as proposed project</p>

<p>Reno, J. E., O'Leary, S., Garrett, K., Pyrzanowski, J., Lockhart, S., Campagna, E., et al. (2018). Improving provider communication about HPV vaccines for vaccine-hesitant parents through the use of motivational interviewing. <i>Journal of Health Communication</i>, 23(4), 313-320.</p>	<p>Level V</p>	<p>use of MI skills increased from 72% to 90% post intervention</p>	<p>improved provider's communication with HPV vaccine hesitant parents and providers report use of MI played central role in vaccine acceptance</p>	<p>Method: analysis of intervention aimed at improving provider communication with vaccine hesitant parents. Process evaluation via surveys and program eval forms. Limitations: assessment for MI use outside of training was not included, survey outcomes measured full intervention not specific eval of MI influence. Relevance to project: same intervention, using MI to enhance communication skills, yields positive results for perceived increased knowledge and efficacy.</p>
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<p>Shibli, R., Rishpon, S., Cohen-Dar, M., & Kandlik, Y. (2019). What affects pediatric healthcare providers to encourage receipt of routine childhood vaccinations? results from the northern district of Israel, 2016. <i>Vaccine</i>, 37(3), 524-529.</p>	<p>Level IV</p>	<p>insufficient knowledge level about vaccines was demonstrated (mean score 5.2 ± 0.91 and 4.71 ± 1.21 points out of in the preventative and curative services, respectively; $p=0.002$).</p>	<p>There is a need to increase the commitment of HCPs to encourage parents to vaccinate their children with routine vaccines, to improve their knowledge about vaccines, and to provide them with communication tools to deal with vaccine-hesitant parents.</p>	<p>Method: A structured, anonymous, self-administered questionnaire was used. Limitations: this is a cross-sectional study, and therefore it was possible to conclude about associations between the various variables, the study population included pediatric HCPs only from the preventive and curative services in the Jewish sector and in one district of Israel, and therefore did not represent all HCPs working in these frameworks. Relevance to practice: supports need to increase provider recommendation, improve their knowledge about vaccines, and providers need communication tools to deal with hesitant parents</p>
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<p>Taylor, L. E., Swerdfeger, A. L., & Eslick, G. D. (2014). Vaccines are not associated with autism: An evidence-based meta-analysis of case-control and cohort studies. <i>Vaccine</i>, 32(29), 3623-3629.</p>	<p>Level IV</p>	<p>Cohort studies revealed no relationship b/t vaccines and autism (OR: 0.99, 95% CI: 0.92 to 10.6), no relationship b/t MMR and autism (R (OR: 0.84; 95% CI: 0.70 to 1.01), or thimerosal (OR: 1.00; 95% CI: 0.77 to 1.31), or mercury (Hg) (OR: 1.00; 95% CI: 0.93 to 1.07). Similarly, the case-control data found no evidence for increased risk of developing autism or ASD following MMR, Hg, or thimerosal exposure when grouped by condition (OR: 0.90, 95% CI: 0.83 to 0.98; p = 0.02) or grouped by exposure type (OR: 0.85, 95% CI: 0.76 to 0.95; p = 0.01).</p>	<p>No evidence of causal relationship between vaccines and autism</p>	<p>Method: relative studies assessed the relationship b/t vaccine administration and subsequent development of autism. Limitations: duplicate data could influence results. Relevance to project: helps to dispel the myth of the causal relationship between vaccines and autism</p>
<p>The Editors of The Lancet. (2010). Retraction—Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children. <i>Lancet</i>, the, 375(9713), 445-445.</p>	<p>Level VII</p>	<p>the claims in the original paper that children were “consecutively referred” and that investigations were “approved” by the local ethics committee have been proven to be false.</p>	<p>Editors of the lancet revealed flaws in the Wakefield study</p>	<p>Simple statement from editors of journal.</p>

<p>Wade, G. H. (2014). Nurses as primary advocates for immunization adherence. <i>MCN, the American Journal of Maternal/Child Nursing</i>, 39(6), 351-356.</p>	<p>Level VII</p>	<p>Discussed: immunization regulations and exemptions, recommendations and schedules, parental concerns, and ways to improve vaccine adherence</p>	<p>Support and encouragement by nurses to parents who are in the process of a decision about vaccination of their child that is based on accurate information can promote best practice and a healthy childhood outcome.</p>	<p>Relevance to project: supports HCPs advocating for vaccine uptake, and aiding parents in making informed decisions about vaccines.</p>
<p>World Health Organization [WHO]. (2018). Immunization Coverage. Retrieved from https://www.who.int/en/news-room/fact-sheets/detail/immunization-coverage</p>	<p>Gray Literature</p>	<p>Reviews benefits of immunizations, global vaccine coverage, uptake, statistics on avoidable deaths, and rates of under immunization</p>	<p>Overview of immunization coverage.</p>	<p>Global agency that works to build better, healthier futures for people all over the world, strive to combat disease.</p>
<p>World Health Organization [WHO]. (2019). Immunization, Vaccines, and Biologicals. Retrieved from https://www.who.int/immunization/quality_safety/en/</p>	<p>Gray Literature</p>	<p>focuses on safety and quality</p>	<p>Discuss immunizations, vaccines, and biologicals</p>	<p>Global agency that works to build better, healthier futures for people all over the world, strive to combat disease.</p>

Appendix C

Organizational Letter of Support

Date: April 8, 2019

Dr. Helene Reilly

East Carolina University-Health Sciences Campus

600 Moye Blvd, Greenville, NC 27834

Dear Dr. Reilly,

The [redacted] have reviewed Julia Banks' DNP Project Proposal "Preparing Health Care Providers for Vaccine Discussions." Ms. Banks has organizational support and approval to conduct her project within our organization. We understand the timeframe for this project is from the date of this letter through April 30, 2020. Implementation at the project site will occur in late August early September through November 30, 2019, unless otherwise negotiated. Additionally, we understand Ms. Banks successful completion of the DNP program requires dissemination of the project by the University which will include a public presentation related to the project and a manuscript submission.

Our organization has deemed this project as a quality improvement initiative. We are aware that this project will be processed through the Internal Review Board of East Carolina University (UMCIRB). Our organization does not have an Internal Review Board (IRB). We understand in the absence of an organizational IRB, the project will be only submitted to UMCIRB. I also understand that the Institutional Review Board (IRB) at East Carolina University will be consulted regarding protection of confidentiality, privacy, and the well-being of project participants. Further, it is my understanding that the student will be advised in this project by a faculty member who will have regular contact with this student, and that the student will make a formal proposal for approval to a committee of faculty prior to implementation.

Please feel free to contact me if you have any questions.

Thank you,

[redacted signature]

Assistant Health Director—Clinical Services

[redacted name]
[redacted address]

Appendix D


Project PowerPoint Presentation

**PREPARING NURSES FOR
VACCINE CONVERSATIONS**

QUALITY IMPROVEMENT PROJECT
JULIA BANKS, DNP(15), BSN, RN
EAST CAROLINA UNIVERSITY
FALL 2019

OBJECTIVES

- Assess immunization/vaccine knowledge
- Provide basic information on recommended childhood vaccines
- Provide motivational interviewing strategies to enhance communication
- Encourage practice change in promotion of immunization in the community




**CHILD & ADOLESCENT
IMMUNIZATIONS**


- Dtap
- Hep B
- Rotavirus
- Hib
- PCV13
- IPV
- MMR
- Hep A
- VAR
- Men
- Tdap
- HPV
- Men B
- PPSV23
- Influenza

ACTIVE VS PASSIVE IMMUNITY

- **Active Immunity**
 - Active immunity results when exposure to a disease organism triggers the immune system to produce antibodies to that disease.
 - Natural
 - Vaccine-Induced
- **Passive Immunity**
 - a person is given antibodies to a disease rather than producing them through his or her own immune system.
 - IgG
 - Placental transmission



PARENTAL CONCERNS




- Adjuvants
- Autism
- Febrile seizures
- Guillain-Barre Syndrome
- SIDS
- Thimerosal
- Immune system overload

VACCINE SAFETY

- CDC Immunization Safety Office (ISO)
- Vaccine Adverse Event Reporting System (VAERS)
- Clinical Immunization Safety Assessment Project (CISA)
- Emergency Preparedness

- **Monitoring Safety**
 - Performing high-quality vaccine safety research.
 - Making determinations about whether vaccines caused reactions in certain cases and helping to learn about preventable risk factors.
 - Identifying vaccine adverse events through public health surveillance.

ADVERSE REACTIONS

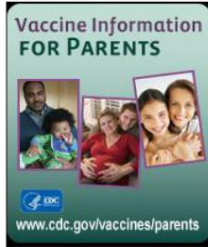


An adverse reaction is an undesirable side effect that occurs after a vaccination.

- Local reactions (e.g., redness)
- Systemic reactions (e.g., fever)
- Severe allergic reactions (e.g., anaphylaxis)

WHAT PARENTS NEED TO KNOW!

- Safety is a priority
- Systematic monitoring
- Vaccines can cause side effects, but serious effects are rare
- Multiple vaccines are ok
- Parents can help in the monitoring of safety (reporting adverse reactions)



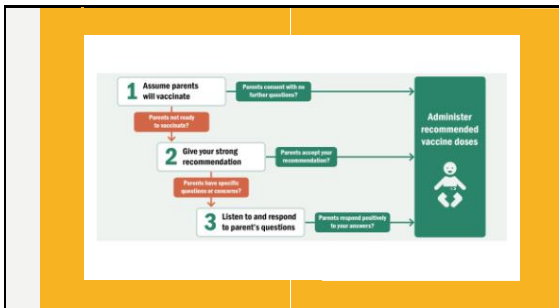
www.cdc.gov/vaccines/parents

MYTHS AND TALES

- MMR linked to Autism
- Multiple vaccines will overload immune system
- Immunizations causes SIDS
- Natural immunity is better than vaccine-acquired immunity.
- Vaccines contain unsafe toxins.
- Better hygiene and sanitation are actually responsible for decreased infections, not vaccines.
- Vaccines aren't worth the risk.
- Vaccines can infect my child with the disease it's trying to prevent.
- We don't need to vaccinate because infection rates are already so low in the United States.

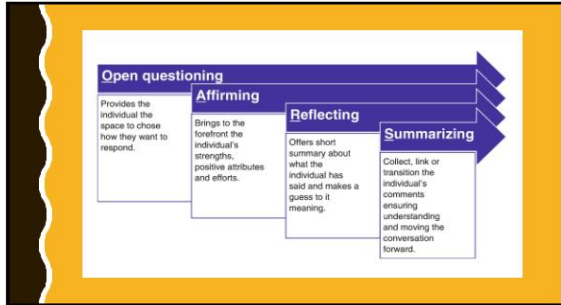
HERD IMMUNITY

- <https://www.historyofvaccines.org/content/erd-immunity-0>




WHEN THEY ARE UNSURE....TRY MOTIVATIONAL INTERVIEWING

- Motivational Interviewing focuses on exploring and resolving ambivalence and centers on motivational processes within the individual that facilitate change.




IF THEY DECLINE...

- Inform parents about clinical presentations of vaccine preventable diseases, including early symptoms.
- Continue the conversation about vaccines during the next visit and restate your recommendation.
- Share resources
- Work with parents to agree on at least one action, such as:
 - Scheduling another appointment
 - Reviewing resources provided



IMMUNIZATIONS SAVES LIVES!

VACCINES ARE ONE OF THE BIGGEST PUBLIC HEALTH VICTORIES IN HUMAN HISTORY



QUESTIONS

Appendix E

DNP Project Costs Analysis

Item Description	Price	Qty:	Total
Color Printing	0.13/page	75	\$9.75
Pizza	\$6.00/pizza	4	\$24.00
Beverages	\$2.00/2 liter	3	\$6.00
Travel	0.45/mile	840	\$378.00
Clipboards	\$1.00/item	4	\$4.00
Total			\$421.75

Appendix F

ECU IRB Review Waiver

Quality Improvement/Program Evaluation Self-Certification Tool

Purpose:

Projects that do not meet the federal definition of human research pursuant to 45 CFR 46 do not require IRB review. This tool was developed to assist in the determination of when a project falls outside of the IRB's purview.

Instructions:

Please complete the requested project information, as this document may be used for documentation that IRB review is not required. Select the appropriate answers to each question in the order they appear below. Additional questions may appear based on your answers. If you do not receive a STOP HERE message, the form may be printed as certification that the project is "not research" and does not require IRB review. The IRB will not review your responses as part of the self-certification process.

Name of Project Leader:

Julia Banks

Project Title:

Preparing Health Care Providers for Vaccine Discussions

Brief description of Project/Goals:

The purpose of this Doctor of Nursing Practice (DNP) quality improvement (QI) project is to increase immunization nurses' knowledge of common childhood immunizations, thus enhancing the education and counseling provided to parents/caregivers surrounding childhood immunizations. Knowledge of childhood vaccine's benefits, risks, and contraindications contribute to nurses' comfort in communicating about vaccines. A nurse's confidence level decreases parental anxiety about vaccines. About one-third of the United State (US) studies on vaccines reveal that among the parents who have concerns about vaccines, less than five percent are anti-vaccination, and a larger portion is described as vaccine -hesitant (Dube, Vivion, & MacDonald, 2015). When organizations are more cognizant of barriers to immunization uptake, they can better understand parental

hesitancy and develop strategies to help lessen the hesitancy. The project will take place in an immunization clinic at a local Public Health Department in the south western region of North Carolina from August to December 2019. A Plan-Do-Study-Act cycle with pre -and post-implementation surveys assessing knowledge and communication skills will be utilized. The process includes a pre-implementation survey assessing the nurses' knowledge of childhood immunizations, as well as confidence in communicating information to parents/caregivers. After collecting feedback from the nurses, the DNP student will conduct an education session to provide information on common childhood immunizations and motivational interviewing strategies. The session will also focus on changing practice from promoting immunizations for school readiness to promoting immunizations for the health of the community. Following the educational session, a post-implementation survey assessing knowledge and confidence in communication will be completed. Data will be collected from the pre- and post-implementation surveys. The data will be used to determine if an education session is effective in enhancing the knowledge and communication skills of immunizations clinic nurses. Additional data will be collected to determine if the rate of immunization acceptance in the clinic is impacted by staff's enhanced knowledge and communication, by determining the number of immunizations administered during the same timeframe in 2018 compared to 2019.

Will the project involve testing an experimental drug, device (including medical software or assays), or biologic?

Yes

No

Has the project received funding (e.g. federal, industry) to be conducted as a human subject research study?

Yes

No

Is this a multi-site project (e.g. there is a coordinating or lead center, more than one site participating, and/or a study-wide protocol)?

Yes

No

Is this a systematic investigation designed with the intent to contribute to generalizable knowledge (e.g. testing a hypothesis; randomization of subjects; comparison of case vs. control; observational research; comparative effectiveness research; or comparable criteria in alternative research paradigms)?

Yes

No

Will the results of the project be published, presented or disseminated outside of the institution or program conducting it?

Yes

No

Based on your responses, the project appears to constitute QI and/or Program Evaluation and IRB review is not required because, in accordance with federal regulations, your project does not constitute research as defined under 45 CFR 46.102(d). If the project results are disseminated, they should be characterized as QI and/or Program Evaluation findings. Finally, if the project changes in any way that might affect the intent or design, please complete this self-certification again to ensure that IRB review is still not required. Click the button below to view a printable version of this form to save with your files, as it serves as documentation that IRB review is not required for this project.

6/20/2019

Appendix G

Preparing Nurses for Vaccine Conversations Pre-Intervention Survey

1. How many years of experience as a nurse: _____

2. How many years of experience working with immunizations: ____

3. Please rate your knowledge of adjuvants/additives used in immunizations.

Extremely knowledgeable _____ Very knowledgeable _____

Moderately knowledgeable _____ Somewhat knowledgeable _____

Not knowledgeable at all _____

4. Please rate your knowledge of adverse effects associated with vaccine administration.

Extremely knowledgeable _____ Very knowledgeable _____

Moderately knowledgeable _____ Somewhat knowledgeable _____

Not knowledgeable at all _____

5. Have you ever encountered a parent who refused a recommended vaccine?

Yes _____ No _____

6. In the past 30 days, how many parents/guardians did you encounter who were unsure about vaccinating their child/children? _____

7. What is your personal comfort level of addressing parental concerns when parents are unsure about vaccinating their child/children?

Extremely comfortable _____ Somewhat comfortable _____

Neither comfortable/uncomfortable _____ Uncomfortable _____

Very uncomfortable _____

8. Rate the following statement.

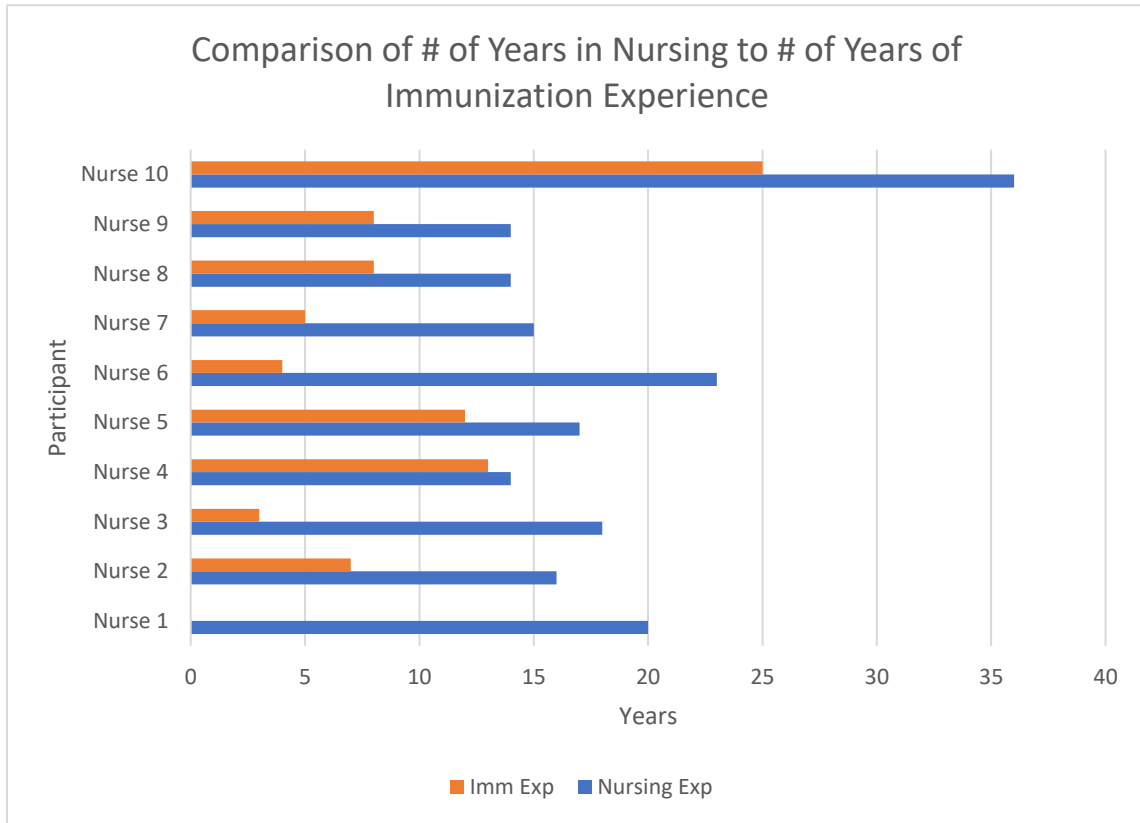
I have adequate knowledge of common childhood immunizations related to purpose, recommendation, schedule, adverse reactions, and safety.

Strongly agree _____ Somewhat agree _____ Neither agree or disagree _____

Somewhat Disagree _____ Strongly Disagree _____

Appendix H

Pre-Intervention Survey Demographic Survey Data



Appendix I

Preparing Nurses for Vaccine Conversations Post-Intervention Survey

1. **How many years of experience as a nurse:** _____
2. **How many years of experience working with immunizations:** _____
3. **Please rate your knowledge of adjuvants/additives used in immunizations.**
 Extremely knowledgeable _____ Very knowledgeable _____
 Moderately knowledgeable _____ Somewhat knowledgeable _____
 Not knowledgeable _____
4. **Please rate your knowledge of adverse effects associated with vaccine administration.**
 Extremely knowledgeable _____ Very knowledgeable _____
 Moderately knowledgeable _____ Somewhat knowledgeable _____
 Not knowledgeable _____
5. **Have you ever encountered a parent who refused a recommended vaccine?**
 Yes _____ No _____
6. **In the past 30 days, how many parents/guardians did you encounter who were unsure about vaccinating their child/children?** _____
7. **What is your personal comfort level of addressing parental concerns when parents are unsure about vaccinating their child/children?**
 Extremely comfortable _____ Somewhat comfortable _____
 Neither comfortable/uncomfortable _____ Somewhat uncomfortable _____
 Very uncomfortable _____
8. **How likely are you to incorporate information learned from this project into your vaccine education?**
 Extremely likely _____ Somewhat likely _____ Neither likely nor unlikely _____
 Somewhat unlikely _____ Extremely unlikely _____
9. **Because of this project, my vaccine knowledge has increased.**
 Strongly agree _____ Somewhat agree _____ Neither agree/disagree _____
 Somewhat disagree _____ Strongly disagree _____
10. **Because of this project, my confidence in communicating about vaccines has increased.**
 Strongly agree _____ Somewhat agree _____ Neither agree/disagree _____
 Somewhat disagree _____ Strongly disagree _____
11. **What barriers do you perceive contribute to your lack of immunization knowledge?**
12. **What barriers do you perceive will impede implementation of knowledge gained from this DNP project in to practice?**

Appendix J
 CDC Handouts

If You Choose Not to Vaccinate Your Child, Understand the Risks and Responsibilities.

Reviewed March 2012

If you choose to delay some vaccines or reject some vaccines entirely, there can be risks. Please follow these steps to protect your child, your family, and others.

With the decision to delay or reject vaccines comes an important responsibility that could save your child's life, or the life of someone else.

Any time that your child is ill and you:

- call 911;
- ride in an ambulance;
- visit a hospital emergency room; or
- visit your child's doctor or any clinic

you must tell the medical staff that your child has not received all the vaccines recommended for his or her age.

Keep a vaccination record easily accessible so that you can report exactly which vaccines your child has received, even when you are under stress.

Telling health care professionals your child's vaccination status is essential for two reasons:

- When your child is being evaluated, the doctor will need to consider the possibility that your child has a vaccine-preventable disease. Many of these diseases are now uncommon, but they still occur.
- The people who help your child can take precautions, such as isolating your child, so that the disease does not spread to others. One group at high risk for contracting disease is infants who are too young to be fully vaccinated. For example, the measles vaccine is not usually recommended for babies younger than 12 months. Very young babies who get measles are likely to be seriously ill, often requiring hospitalization. Other people at high risk for contracting disease are those with weaker immune systems, such as some people with cancer and transplant recipients.

Before an outbreak of a vaccine-preventable disease occurs in your community:

- Talk to your child's doctor or nurse to be sure your child's medical record is up to date regarding vaccination status. Ask for a copy of the updated record.
- Inform your child's school, childcare facility, and other caregivers about your child's vaccination status. -
- Be aware that your child can catch diseases from people who don't have any symptoms. For example, Hib meningitis can be spread from people who have the bacteria in their body but are not ill. You can't tell who is contagious.



When there is vaccine-preventable disease in your community:

- It may not be too late to get protection by getting vaccinated. Ask your child's doctor.
 - If there are cases (or, in some circumstances, a single case) of a vaccine-preventable disease in your community, you may be asked to take your child out of school, childcare, or organized activities (for example, playgroups or sports).
 - Your school, childcare facility, or other institution will tell you when it is safe for an unvaccinated child to return.
- Be prepared to keep your child home for several days up to several weeks.**
- Learn about the disease and how it is spread. It may not be possible to avoid exposure. For example, measles is so contagious that hours after an infected person has left the room, an unvaccinated person can get measles just by entering that room. -
 - Each disease is different, and the time between when your child might have been exposed to a disease and when he or she may get sick will vary. Talk with your child's doctor or the health department to get their guidelines for determining when your child is no longer at risk of coming down with the disease.

Be aware.

- 4 Any vaccine-preventable disease can strike at any time in the U.S. because all of these diseases still circulate either in the U.S. or elsewhere in the world.
- 4 Sometimes vaccine-preventable diseases cause outbreaks, that is, clusters of cases in a given area.
- 4 Some of the vaccine-preventable diseases that still circulate in the U.S. include whooping cough, chickenpox, Hib (a cause of meningitis), and influenza. These diseases, as well as the other vaccine-preventable diseases, can range from mild to severe and life-threatening. In most cases, there is no way to know beforehand if a child will get a mild or serious case.
- 4 For some diseases, one case is enough to cause concern in a community. An example is measles, which is one of the most contagious diseases known. This disease spreads quickly among people who are not immune.

If you know your child is exposed to a vaccine-preventable disease for which he or she has not been vaccinated:

- Learn the early signs and symptoms of the disease.
- Seek immediate medical help if your child or any family members develop early signs or symptoms of the disease. -

IMPORTANT: Notify the doctor's office, urgent care facility, ambulance personnel, or emergency room staff that your child has not been fully vaccinated before medical staff have contact with your child or your family members. They need to know that your child may have a vaccine-preventable disease so that they can treat your child correctly as quickly as possible. Medical staff also can take simple precautions to prevent diseases from spreading to others if they know ahead of time that their patient may have a contagious disease.

- Follow recommendations to isolate your child from others, including family members, and especially infants and people with weakened immune systems. Most vaccine-preventable diseases can be very dangerous to infants who are too young to be fully vaccinated, or children who are not vaccinated due to certain medical conditions.
- Be aware that for some vaccine-preventable diseases, there are medicines to treat infected people and medicines to keep people they come in contact with from getting the disease.
- Ask your health care professional about other ways to protect your family members and anyone else who may come into contact with your child.
- Your family may be contacted by the state or local health department who track infectious disease outbreaks in the community. -

If you travel with your child:

- Review the CDC travelers' information website (<http://www.cdc.gov/travel>) before traveling to learn about possible disease risks and vaccines that will protect your family. Diseases that vaccines prevent remain common throughout the world, including Europe. -
- Don't spread disease to others. If an unimmunized person develops a vaccine-preventable disease while traveling, to prevent transmission to others, he or she should not travel by a plane, train, or bus until a doctor determines the person is no longer contagious.

Reviewed April 2018

Talking with Parents about Vaccines for Infants

Doctors, nurses, physician assistants, and office staff all play a key role in establishing and maintaining a practice-wide commitment to communicating effectively about vaccines and maintaining high vaccination rates. You can all answer parents' questions, provide educational materials, and ensure that families make and keep vaccine appointments.

Parents consider their child's health care professionals to be their most trusted source of information when it comes to vaccines. This is true even for parents who are vaccine-hesitant or who have considered delaying one or more vaccines. Therefore, you have a critical role in helping parents choose vaccines for their child.

With all you do, you may feel that long vaccine conversations are stressful when you also need to check physical and cognitive milestones and have a full schedule of patients. Because of this, we designed this resource to guide you with conversational techniques and resources for discussing vaccines with parents.

Assume parents will vaccinate

State which vaccines the child needs to receive.

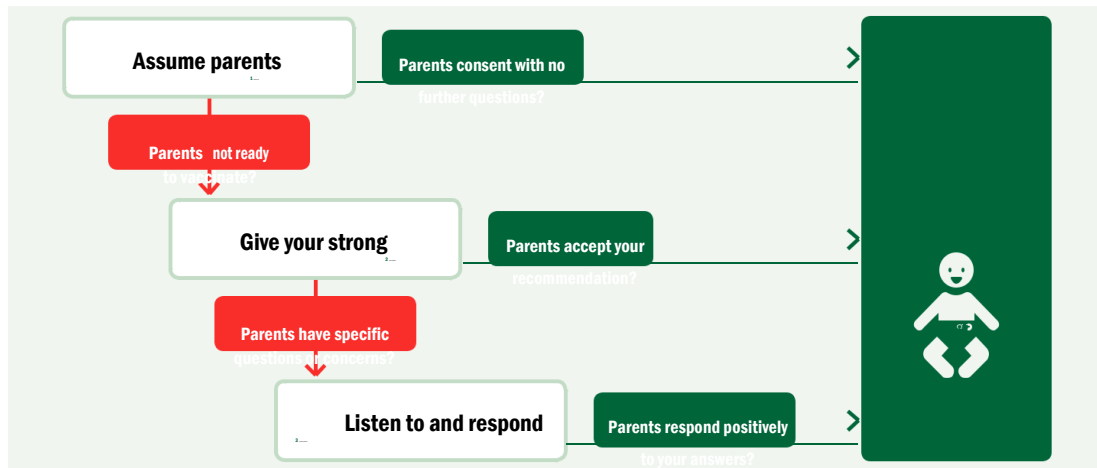
When discussing vaccines for children, it is best to remember most parents are planning to accept vaccines and to introduce the topic with that in mind. State the child will receive

vaccines as though you presume that parents are ready to accept recommended vaccines for their child during that visit. For example:

Instead of saying *"What do you want to do about shots?"*, say *"Your child needs three shots today."*

Instead of saying *"Have you thought about the shots your child needs today?"*, say *"Your child needs DTaP, Hib, and Hepatitis B shots today."*

A research study looking at health care professionals' (HCPs) and parents' interactions during vaccine visits showed that parents were more likely to express concerns when providers used language that asked parents about their vaccination plans. In this study, the presumptive approach resulted in significantly more parents accepting vaccines for their child, especially at first-time visits¹. However, if parents still hesitate or express concerns, move to the next step and give your strong recommendation.



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

Give your strong recommendation

If parents express concerns, then share your strong vaccine recommendation.

Although parents frequently consult family members, friends, and webpages for information on vaccines, parents consistently rank their child's doctor as their most trusted source for vaccine information. With this unique position, your strong recommendation is critical for vaccine acceptance.

Clearly state your strong recommendation. If appropriate, you can add a brief supporting statement that uses a mix of science and anecdote, depending on what you think will be most effective with that parent. Share the importance of vaccines to protect children from potentially life threatening diseases, or talk about your personal experiences with vaccination. For example:

*"I strongly recommend your child get these vaccines today..." "These shots are very important to protect him from serious diseases."
"...I believe in vaccines so strongly that I vaccinated my own children on schedule."
"...This office has given thousands of doses of vaccines and we have never seen a serious reaction."*

Listen to and respond to parents' questions

Seek to understand parents' concerns and provide requested information.

Although research shows most parents in the U.S. [support vaccines](#), you will encounter parents with questions. If a parent has concerns, resists following the recommended vaccine schedule, or questions your strong recommendation, this doesn't necessarily mean they won't accept vaccines. Sometimes parents simply want *your* answers to their questions. Your willingness to listen to their concerns will play a major role in building trust in you and your recommendation.

When listening, seek to understand the concerns behind parents' questions before responding with information the parent may not be asking about. If you encounter questions you do not know the answer to, or information from sources you are unfamiliar with, it is best to acknowledge the parent's concerns and share what you *do know*. Offer to review the information they have found and, if necessary, schedule another appointment to discuss it further.

What if parents refuse to vaccinate?

If parents decline immunizations after your strong recommendation and conversation, use the following strategies:

- f Continue the conversation about vaccines during the next visit and restate your strong recommendation.
- f Inform parents about clinical presentations of vaccine-preventable diseases, including early symptoms.
- f Remind parents to call before bringing their child into the office, clinic, or emergency department when the child is ill so health care professionals can take precautions to protect others. Explain that when scheduling an office visit for an ill child who has not received vaccines, you will need take all possible precautions to prevent contact with other patients, especially those too young to be fully vaccinated and those who have weakened immune systems.
- f Share [If You Choose Not to Vaccinate Your Child, Understand the Risks and Responsibilities](#) with parents. This fact sheet explains the risks involved with their decision, including risks to other members of their community, and additional precautionary responsibilities for parents.
- f You may wish to have parents sign [AAP's Refusal to Vaccinate form](#) each time a vaccine is refused so that you have a record of their refusal in their child's medical file.

Wrapping up the conversation

Remember that success comes in many forms. It may mean that parents accept all vaccines when you recommend them, or that they schedule some vaccines for another day. For very vaccine-hesitant parents, success may simply mean agreeing to leave the door open for future conversations.

Work with parents to agree on at least one action, such as:

- f Scheduling another appointment or
- f Encouraging the parent to read additional information you provide them.

If a parent declines vaccines once, it does not guarantee they always will. Continue to remind parents about the importance of keeping their child up to date on vaccines during future visits and work with them to get their child caught up if they fall behind.

Find resources for specific parent questions:
[Preparing For Vaccine Questions Parents May Ask](#)

For information on vaccines, vaccine safety, and vaccine preventable diseases:
www.cdc.gov/vaccines/conversations

1 Opel, D. J., MD, MPH. (2015). The Influence of Provider Communication Behaviors on Parental Vaccine Acceptance and Visit Experience. *The American Journal of Public Health*, 105(10), 1998-2004.

Reviewed January 2019

Preparing for Questions Parents May Ask about Vaccines

Many parents won't have questions about vaccines when you give your strong recommendation and use language that assumes parents will accept vaccines for their child.

If a parent questions your recommendation, this does not necessarily mean they will not accept vaccines. They consider you their most trusted source of information when it comes to vaccines and sometimes parents simply want your answers to their questions. This sheet outlines some of the topics most parents ask about and tips for how to answer their questions.

Questions about the vaccine schedule and number of vaccines

Some parents may be concerned that there are too many vaccines or that their child will receive too many at one time. But, they may not understand that following the recommended vaccine schedule provides the best protection at the earliest possible time against serious diseases that may affect infants early in life.

Parents may ask: *Can it harm my child to get several vaccines at one time? Does my child need all of the vaccines recommended?*

To respond, you can:

- f Share that no evidence suggests that receiving several vaccines at one time will damage or overwhelm a healthy child's immune system.
- f Explain what antigens are (parts of germs) and emphasize the small amount of antigens in vaccines compared to the antigens babies encounter every day in their environment.
- f Remind parents that they must start each vaccine series on time to protect their child as soon as possible and their child must complete each multi-dose series for the best protection. There are no data to support that spacing out vaccines offers safe or effective protection from these diseases.

"There's no proven danger in getting all recommended vaccines today. Any time you delay a vaccine, you leave your baby vulnerable to disease. It's really best to stay on schedule."

Questions about whether vaccines are more dangerous for infants than the diseases they prevent

Because vaccines are very effective, many parents have not seen a case of a vaccine-preventable disease firsthand. Therefore, they may wonder if vaccines are necessary and if the risks of vaccinating infants outweigh the benefits of protection from vaccine preventable diseases.

Parents may ask: *Are these diseases that dangerous? Is it likely that my baby will catch this disease? Will ingredients in vaccines hurt my baby more than possibly getting the disease could?* To respond, you can:

- f Share your experience of how these serious diseases still exist and explain that outbreaks still occur in the U.S. For example:
 - From year to year, measles cases in the U.S. can range from roughly less than 100 to a couple hundred. However, in 2014, health departments reported cases in 667 people from 27 states.
 - Between 1970-2000, health officials reported fewer than 8,000 cases of whooping cough each year in the U.S. But since 2010, health officials have reported between 15,000 and 50,000 cases of whooping cough each year to CDC.
- f Teach parents that diseases eliminated in the U.S. can infect unvaccinated babies if travelers bring the diseases from other countries. If you need up-to-date information on specific diseases, share *Disease Fact Sheets* with parents.
- f Remind parents that many vaccine preventable diseases can be especially dangerous for young children and there's no way to tell in advance if their child will get a severe or mild case. Without vaccines, their child is at risk for getting seriously ill and suffering pain, disability, and even death from diseases like measles and whooping cough.

"I know you didn't get all these vaccines when you were a baby. Neither did I. However, we were both at risk of serious diseases like Hib and pneumococcal meningitis that can lead to deafness or brain damage. Today, we're able to protect your baby from 14 serious diseases before his second birthday with vaccines."

Questions about known side effects

It is reasonable for parents to be concerned about possible reactions or side effects listed on [Vaccine Information Statements](#). Vaccines, like any medication, can cause some side effects. Many of these effects are minor, treatable, and last only a few days.

Parents may ask: *Will my child be okay if she has a side effect? I know someone whose baby had a serious reaction—will my baby too?* To respond, you can:

- f Remind parents that most side effects are mild and go away within a few days.
- f Reassure parents that you and your staff are prepared to deal with serious vaccine reactions.
- f Encourage parents to watch for possible side effects (fussiness, low-grade fever, soreness where the shot was given) and provide information on how they should treat them and how to contact you if they observe something they are concerned about.
- f Share your own experience, or lack thereof, of seeing a serious side effect from a vaccine. Explain that serious side effects are very rare.

Reassure parents that the disease-prevention benefits of getting vaccines are much greater than the risks of possible side effects.



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

"I'll worry if your child doesn't get vaccines today, because the diseases can be very dangerous—most, including Hib, whooping cough, and measles, are still infecting children in the U.S. We can look at the Vaccine Information Statements together and talk about how rare serious vaccine side effects are."

Questions about unknown serious long-term side effects

Parents who look for information about vaccine safety will likely encounter information that says vaccines can lead to serious long-term side effects from vaccines. It is understandable that parents may find this alarming.

Parents may ask: Do vaccines cause long-term side effects? Will getting a vaccine permanently hurt my child's health?

To respond, you can share that:

- f Vaccines are not linked to increases in health problems such as autism, asthma, or auto-immune diseases.
- f There is no evidence to suggest that vaccines threaten a long, healthy life. Conversely, we know lack of vaccination threatens a long and healthy life.

"We have years of experience with vaccines and no reason to believe that vaccines cause long-term harm. I understand your concern, but I truly believe that the risk of diseases is greater than any risks posed by vaccines. Vaccines will get your baby off to a great start for a long, healthy life."

Questions about vaccine ingredients

Parents may ask about the ingredients contained in vaccines. Let them know that vaccines contain very small amounts of the ingredients listed below and that all ingredients play necessary roles either in making the vaccine or in ensuring that the final product is safe and effective.

Parents may ask: Are the ingredients in vaccines safe? Aren't aluminum and mercury dangerous?

- f Preservatives prevent contamination of the vaccine. Thimerosal, a compound containing mercury, is a preservative only found in multi-dose vials of flu vaccine.
- f Adjuvants or enhancers, such as aluminum salts, are used to help the body develop immunity and a better immune response.
- f Stabilizers, such as sugars and gelatin, are used to keep the vaccine potent during transportation and storage.
- f Residual cell culture materials, such as egg protein, are used to grow enough of the virus or bacteria to make the vaccine.
- f Residual inactivating ingredients, such as formaldehyde, are used during the production process to kill viruses or inactivate toxins during the manufacturing process.
- f Residual antibiotics, such as neomycin, are used during the vaccine manufacturing process to prevent contamination by bacteria.

"Each vaccine ingredient plays an important role in either making the vaccine or ensuring that it is safe and effective so it will protect your child."

Questions about whether vaccines cause autism

Although many parents are aware that numerous studies show vaccines do not cause autism, some parents have lingering questions and concerns.

Parents may ask: I've heard some parents say their child's behavior changed after vaccines; how do you know vaccines don't cause autism? Many rigorous studies show that there is no link between MMR vaccine or thimerosal and autism. If parents raise other possible hypotheses linking vaccines to autism, three items are key:

- f Give patient and empathetic reassurance that you understand their infant's health is their top priority, and it also is your top priority, so putting children at risk of vaccine-preventable diseases without scientific evidence of a link between vaccines and autism is a risk you are not willing to take.
- f Share that the onset of autism symptoms often coincides with the timing of vaccines but is not caused by vaccines.
- f Give your personal and professional opinion that vaccines are very safe.

"Autism is a challenge for many families and people want answers—including me. But well designed and conducted studies that I can share with you show that MMR vaccine is not a cause of autism."

Resources for questions about vaccines and autism:

- f [Understanding Thimerosal, Mercury, and Vaccine Safety](#)
- f [Understanding MMR Vaccine Safety](#)

Additional questions parents may ask

- f *Isn't natural immunity better than the kind from vaccines?*
- f *Do I have to vaccinate my baby on schedule if I'm breastfeeding him?*
- f *Why are so many doses needed for each vaccine?*

If you have additional questions from parents, reference [Infant Immunization FAQs](#) for regularly updated answers to common questions.

For information on vaccines, vaccine safety, and vaccine preventable diseases, visit: www.cdc.gov/vaccines/conversations

Appendix K

Vaccine Conversations Post-Contact Questionnaire

(Please complete after contact with each patient)

1. Did you ask the patient/parent if they had questions or concerns regarding recommendation?

Yes No

2. Did you use knowledge or communication skills learned from the education session with this patient?

Yes No

3. What barriers (if any) kept you from discussing concerns with the patient/parent?