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Catching Up the Kids: Implementation of an Educational Program for Pediatric Providers to Overcome Barriers to Immunization Amongst Immigrant Children, A Quality Improvement Project

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Implementation of an Educational Program for Pediatric Providers to Overcome Barriers to Immunization Amongst Immigrant Children, A Quality Improvement Project

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Abstract

For a multitude of reasons, there has been an increase in vaccine hesitancy after the COVID-19 pandemic. Prior to the pandemic, immigrant children were routinely immunized at a lower rate than children born in the United States. In recent years, provider education programs have been proven to increase overall immunization rates for individuals of all ages. This quality improvement project sought to determine the effect of an educational intervention on provider knowledge and confidence in navigating vaccine hesitancy amongst immigrant families. The project utilized a quasi-experimental pretest posttest design with the implementation of a provider education program. Participants were all pediatric providers, including physicians, nurse practitioners, registered nurses and medical assistants, who all provide clinical care in a pediatric primary care clinic in Miami, Florida. Data was collected via pretest and posttest questionnaire, assessing vaccine knowledge, attitudes and recommendation practices. Data was inputted into Qualtrics and statistically analyzed using the Wilcoxon Signed Rank tests. There was a statistically significant increase in both vaccine knowledge and attitudes after the intervention and no statistically significant change for vaccine recommendation practices. Of all providers who had attended previous education regarding childhood immunizations, approximately 70% stated there was never discussion regarding cultural effects on vaccine behaviors. The result of this quality improvement project supports the importance of educating pediatric providers regarding evidence-based information about vaccines and navigating vaccine hesitancy with the eventual goal of increasing childhood immunization rates to greater than 95% nationwide. Understanding the cultural context of vaccine behavior should be at the center for navigating these conversations amongst immigrant children and their families.

Keywords: Childhood immunizations, vaccine hesitancy, pediatric primary care, immigrants

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Introduction

Problem Statement & Significance

According to the Centers for Disease Control and Prevention (CDC), childhood routine immunization rates dropped at a concerning rate after the start of the COVID-19 pandemic in 2020 due to lack of preventive care visits. As of January 2023, kindergarten immunization coverage continues to be at its lowest level over the last decade, placing these children at risk for illness and death secondary to vaccine preventable diseases (Centers for Disease Control & Prevention, 2023). Models formulated from data between 1994 and 2013 show that childhood immunizations will prevent 322 million illnesses and subsequently 732,000 deaths over these individuals' lifetimes. This results in direct savings of $295 billion and overall societal savings of $1.38 trillion, as morbidity and mortality are greatly decreased. If children are not routinely immunized with the 14 recommended vaccines, the diseases are less likely to be eliminated. This causes an increase in preventable illness and death in addition to a continuous financial burden on the healthcare system (MJH Life Sciences, 2019).

Vaccine preventable disease outbreaks particularly threaten the immigrant population (DeRose et al., 2017). Upon entering the United States, immigrants hold multiple reasons for hesitancy toward the routine immunization of their children—language barriers, difficulty understanding United States healthcare, lack of knowledge regarding free vaccinations, low trust in government-funded systems, cultural thought processes, cost and lack of education (Deal et al., 2023). Understanding the socioeconomic factors affecting the healthcare of immigrant children and their families is an integral part of education for providers to ensure these children receive their vaccines and are able to successfully enroll in school and thrive (Howley, 2023). It is uncertain what factor contributes most to the under-immunization of children who have

recently arrived to reside in the United States. Therefore, the delay of routine immunizations for school-aged children due to their recent immigration combined with the recent effects of the COVID-19 pandemic is a gap in knowledge that requires further research.

The first step toward achieving an overall increase in compliance is assessing provider knowledge regarding the reasons immigrant families delay immunizing their children, whether deliberate or not, in the current times after the COVID-19 pandemic. It is crucial for the health care provider to be a trusted source of factual information for the immigrant community. In their "Let's RISE (Routine Immunizations on Schedule for Everyone)" campaign, the CDC calls for providers to play a key role in ensuring children are caught up on routine immunizations post-pandemic in order to prevent future outbreaks of preventable disease (Centers for Disease Control and Prevention, 2023). Evidence has shown that provider-focused educational interventions have proven to increase vaccination rates (Rand & Humiston, 2021). Specifically, this provider education program highlighted barriers to immunizations within the immigrant community, focused on gaining the trust of these parents and caregivers in regard to their children's health. This Doctor of Nursing Practice Project sought to answer the following question: Does the introduction of an educational program for pediatric providers focused on barriers to routine immunizations amongst immigrant children increase provider knowledge in navigating barriers in the clinical setting?

Summary of the Literature

Search Strategy of the Literature

The Florida International University Libraries was utilized to access databases: The Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed and Google Scholar. Search terms included, but were not limited to: *childhood immunizations, routine*

vaccines, immigrant children, COVID-19, pandemic, barriers, vaccine hesitancy, provider interventions. This resulted in approximately 2,641 journal articles. Results were filtered to display published articles after 2017 in order to reflect the most recent literature on the topic. Additionally, they were filtered to be focused on immunizations at the national level, by adding the key term *United States,* as well as the pediatric population by adding *children* or *pediatrics*. Ultimately, 28 relevant articles were reviewed after meeting inclusion/exclusion criteria.

Advanced Literature Review

Prior to the COVID-19 pandemic, immigrant children were routinely immunized at a lower rate than the general population (Daniels et al., 2022). Children in immigrant families are defined as children who are foreign-born or have at least one parent who is foreign-born. Currently, about 1 in 4 children is considered a child of an immigrant family and are less likely to have consistent medical care, screenings, and immunizations (American Academy of Pediatrics, 2019). Because general vaccination rates among children were already a public health concern, The United States Office of Disease Prevention and Health Promotion created a Healthy People 2030 goal of maintaining the rate of vaccination level to protect children from preventable diseases including, but not limited to, diphtheria, pertussis, measles, hepatitis, mumps and varicella (United States Department of Health and Human Services). The problem is further exacerbated amongst immigrant children because of their lower rates prior to the COVID-19 pandemic.

The science behind immunizations became the forefront of conversation in 2020 with the development of the COVID-19 vaccine, leading to a general increase in hesitancy toward routine childhood immunizations (Daniels et al, 2022). Barriers to immunizations have always existed for the immigrant population (Deal et al., 2023). Pediatric providers should be educated on

culturally competent strategies in order to increase trust in the healthcare system and subsequent vaccine compliance in children who have recently arrived in the United States. The PICO question for this Doctor of Nursing Project was: Does the introduction of an educational program for pediatric providers focused on barriers to routine immunizations amongst immigrant children increase provider knowledge in navigating barriers in the clinical setting?

There are four major themes reviewed in the literature that help support this topic of interest: gaps in routine childhood immunizations after COVID-19, barriers to vaccine compliance in immigrant populations, countering vaccine hesitancy and provider-focused vaccination education programs. It is essential to study the vaccination trends of immigrant children and barriers to immunization in order to successfully create and implement a provider-based education program that improves provider confidence levels in addressing vaccine hesitancy.

Gaps in routine childhood immunizations after COVID-19

According to Guglielmi (2022), the COVID-19 pandemic has caused childhood immunization rates to reach a record low within the last thirty years, with an estimated 25 million children left under-immunized due to decreased preventive care visits. One example of this is the rise in measles outbreaks due to a decrease in routine measles vaccinations. During the 2021-2022 school year, 93% of kindergarten children were fully vaccinated, compared to 94% for the 2020-2021 school year. For reference, 93% coverage for MMR vaccination translates to 250,000 children at kindergarten level who are not vaccinated, which can result in outbreaks of vaccine-preventable diseases (Seither et al., 2023). Another marker used to determine vaccine coverage is the completion of three doses of the diphtheria, tetanus and whooping cough (DTP3) immunization, which decreased by 5% between 2019 and 2021. As of June 2024, 151 cases of

measles have been reported in the United States, with 83% of these cases amongst individuals who were unvaccinated (Centers for Disease Control & Prevention, 2024). While these numbers are alarming, there have been marked efforts on a global level to catch-up children on their routine immunizations that were lost to the pandemic (Guglielmi, 2022).

An example of this catch-up effort in the United States is the "Let's RISE" initiative by the Centers for Disease Control and Prevention in the United States. The main goal of RISE is to help both children and adults get back on schedule after the pandemic. The initiative provides health care providers, schools and community partners with resources to share with patients and families regarding the importance of routine immunizations. Strategies to increase rates of vaccinations include providing education on Vaccines for Children (VFC), adding vaccinations to back-to-school checklists and discussing vaccinations with parents. Furthermore, the initiative provides printed resources in multiple languages to disperse to individuals of all cultural backgrounds in the community (Centers for Disease Control and Prevention, 2023).

Barriers to vaccine compliance in immigrant families

Research by Daniels et al. (2022) discusses how refugees, immigrants and migrants (RIM) are under-immunized in comparison to the general United States population. The risk of acquiring vaccine preventable diseases has increased after the COVID-19 pandemic secondary to vaccine hesitancy and health inequity. Some known barriers to vaccination include mistrust in the healthcare system, gaps in knowledge, overall access to care, and safety, which Deal et al. (2023) also discuss as key barriers to under-immunization in this population. These known barriers intensified because of the safety concerns regarding the COVID-19 immunization and growing distrust with the healthcare system (Daniels et al., 2022).

There is limited data available about the vaccination of immigrant children in the United States after the start of the COVID-19 pandemic. Prior to the pandemic, however, Varan et al. (2017) studied the National Immunization Survey for foreign-born children between 19 and 35 months of age. They found that foreign-born children have less vaccination coverage for DTaP, hepatitis A, hepatitis B, Hib, pneumococcal and rotavirus vaccines and are less likely to complete the 4:3:1:3 series, at 26.7% versus 65% in United States native children. The 4:3:1:3:3:1:4 series refers to greater than or equal to 4 doses of diphtheria, tetanus and pertussis, greater than or equal to 3 doses of poliovirus vaccine, greater than or equal to 1 dose of a measles-containing vaccine, greater than or equal to 3 doses of hepatitis B vaccine, greater than or equal to 1 dose of the varicella vaccine, and greater than or equal to 4 doses of the pneumococcal conjugate vaccine. This marked disparity was more statistically significant than when controlling for race, ethnicity and poverty status (Varan et al., 2017).

The Minnesota Department of Health (MDH) sought out to study differences of immunization rates of children with at least one foreign-born parent compared to children with parents born in the United States. They found that these children are less likely to be up to date on routine immunizations at 2, 6, 18 and 36 months. Furthermore, there were differences on vaccination coverage based on the mother's country of birth, noting a vaccination coverage of 77.5% in children with mothers from Central America, South America and the Caribbean and as low as 44.2% in children with mothers from Somalia. There was a recent measles outbreak of 79 confirmed cases in Minnesota from April to August 2017 that is correlated with these statistics, highlighting a need to increase immunization knowledge to these communities and ensure timely vaccination for children. One protective factor noted was maternal participation in Women,

Infants & Children (WIC), with higher rates of vaccination coverage for these children (Leeds & Muscoplat, 2017).

The American Academy of Pediatrics (AAP) acknowledges that immigrant children are at high risk for vaccine-preventable illness. They have created an extensive toolkit for pediatric providers in order to provide immigrant children a thorough exam upon their arrival, taking into consideration the country they came from and possible gaps in immunization status that may be present. The toolkit compiles resources for physical, mental, and social health that can help immigrant children and their families understand what is available for them in the United States (American Academy of Pediatrics, 2019). The information found in AAP's toolkit is valuable in providing a foundation for the proposed provider education program in order to ensure discussions regarding immunizations are culturally sound (Linton et al., 2019).

In a qualitative study, DeRose (2018) explored the concept of trust in the health care provider and health system in relation to the Latino immigrants' experience obtaining required vaccinations for their children. Although disease outbreaks disproportionately affect Latino immigrants in the United States, DeRose (2018) discussed that growing hesitancy still exists as a result of a lack of trust. Cultural differences play a large role in health-care decision making, including in the realm of immunizations. The American Academy of Pediatrics supports the concept that health care systems must be culturally sensitive, valuing cultural humility and safety in order to sustain a trusting provider-patient relationship (Linton et al., 2019).

Countering vaccine hesitancy

The World Health Organization (WHO) defines vaccine hesitancy as "the delay in acceptance or refusal or vaccination despite availability of vaccination services." This is listed as a top ten threat to public health (The World Health Organization). According to Gonzalez et al.

(2023), social determinants of health are catalysts to attitudes of vaccine hesitancy. Examples of social determinants of health include financial difficulties and lower levels of education. Their study found that the prevalence of vaccine hesitancy among a Hispanic/Latino population of parents was 15.4%, concluding that parental trust in the pediatric provider is important for vaccine acceptance. Additionally, an education level less than college-level among parents is correlated with increased vaccine hesitancy. While this data was gathered prior to the pandemic, the researchers emphasize its importance in understanding vaccine behaviors in vulnerable populations, such as immigrant families (Gonzalez et al., 2023).

Vaccine hesitant individuals fall along a spectrum with variable degrees of indecision about either specific vaccines or immunizations at large. The American Academy of Pediatrics recommends continuous conversation with parents who may be hesitant toward vaccines without refusing to care for their child. With each interaction, the pediatric provider creates a chance that the parent may accept the immunizations. Parental concerns regarding vaccine safety and necessity are the most common causes for refusal. In order to effectively counter vaccine hesitancy, the pediatric provider must articulate the safety of vaccines and importance of immunizations in preventing serious disease, while also proactively listening to parental concerns (Edwards et al., 2016). There is a key distinction between children who are unvaccinated and undervaccinated, as described by Goldlust et al. (2017). Unvaccinated children are generally the result of personal parental beliefs and choice, commonly from affluent neighborhoods and increased resources. In contrast, undervaccinated children tend to be from low-income households with inadequate healthcare insurance coverage, making their parents and caregivers less likely to prioritize timely immunizations. This distinction is key for the healthcare provider to understand when addressing vaccine hesitancy.

Deal et al. (2023) discusses the complexity of vaccine hesitancy, introducing the "Increasing Vaccination Model" that has been adopted by the WHO to more accurately describe the domains that influence individuals to either accept or reject immunizations. These three domains include: what people think and feel about vaccine, the social processes that affect individual desire and practical factors of receiving the vaccination. Overall, the concept of trust is a major theme regarding combatting vaccine hesitancy. Providing factual and evidence-based knowledge regarding immunizations is only effective if done in a culturally competent way with supportive language and printed materials (Deal et al., 2023). Because the concept of vaccine hesitancy is complex, the intervention to combat it must also be multifaceted.

Research by Olson et al. (2020) shows that the manner information regarding vaccinations is delivered is key to communicating with parents who are vaccine hesitant. Interactions must be focused on stopping the spread of misleading information and providing facts backed by evidence. Parents have proven to be receptive to conversations regarding immunizations only if the messenger is both trustworthy and knowledgeable, stating that one-on-one dialogue regarding the subject is preferred over being handed a sheet of paper. Current public health recommendations include starting the immunization discussion early with parents, tailoring information to the parental audience (i.e. immigrants), presenting immunization as the default standard, utilizing technology, and improve overall patient vaccine literacy (Olson et al., 2020). Additionally, the AAP has multiple resources for pediatric providers in order to assist in communicating effectively about immunizations, noting common parental concerns (Edwards et al., 2016).

Provider-focused vaccination education programs

According to Rand & Humiston (2021), provider-focused interventions have proven to increase immunization rates. They group these interventions into three groups: assessment and feedback to increase internal motivation, pre-visit planning and huddles and communication training focused on vaccine hesitancy. The Community Preventive Services Task Force (CPSTF) recommends provider assessment and feedback programs to increase vaccination rates, as rates among children increased by 10.5 percentage points. Specifically, "audit and feedback" refers to sharing vaccination rates with clinicians within a practice and giving feedback regarding the rates, in an effort to incentivize and increase them. Combining this "audit and feedback" mentality with provider education has shown to increase immunization rates (Rand & Humiston, 2021). Overall, interventions to combat barriers to vaccination are most successful when they include a variety of methods.

Daniels et al. (2022) introduces three themes for effective vaccination programs: information from a trusted source, which could be the health care provider, culturally tailored education and facilitated access. As Deal et al. (2023) mentioned, the World Health Organization supports the "Increasing Vaccination Model" to address the complexity of vaccine hesitancy. An interesting strategy is the introduction of a vaccine counselor, who can be any member of the health care team. This individual receives specialized training about discussing vaccinations. Modeled in education, the training allows the vaccination counselors to share evidence-based data with parents and engage in conversations regarding any hesitation. There is an additional psychological component to these conversations that is addressed with the introduction of counseling skills to build a trustworthy relationship. Finally, the vaccine counselor is taught to navigate through the risks versus benefits conversation with parents to provide fact-based information (World Health Organization).

The Pediatric Infectious Diseases Society, in conjunction with the Collaboration for Vaccine Education and Research (CoVER), created a Comprehensive Vaccine Education Program to assist providers in countering vaccine misinformation and addressing overall vaccine hesitancy amongst parents. The program has two main goals, which are to increase vaccine knowledge and confidence via discussion and to improve access to reliable resources regarding vaccines through The Vaccine Handbook Mobile Application. There is information available specifically for the pediatric population. This program is encouraged to be shared with groups of pediatric providers with hope of improving communications with parents regarding gaps in immunizations (Pediatric Infectious Disease Society).

A review by Novilla et al. (2023) discusses multiple methods to ensure that information regarding vaccines is distributed in a factual and culturally sound manner. Some recommendations include using competent interpreters if the language is not spoken, providing adequate time for discussion during visits when vaccine hesitancy is expressed, providing vaccine information prior to clinic visits, offering clear recommendations, beginning conversations regarding immunizations as soon as the child is born, and involving community figures that may have an influence on healthcare practices. Relatedly, training the provider to have a presumptive tone rather than participatory tone while discussing vaccines with immigrant children and their families transfers a sense of confidence between parent and provider, highlighting vaccines as a routine part of well child visits (Novilla et al., 2023).

Conclusion

This search of the literature highlights the multitude of research regarding the effect of COVID-19 on childhood immunizations and barriers to vaccination in the immigrant communities. Researchers are aware that the pandemic caused general childhood routine

immunization rates to decrease, barriers to immunization for immigrants have remained apparent and vaccine hesitancy continues to rise. The research also discusses methods that providers can utilize to gain trust with immigrant families that have proven beneficial to vaccine acceptance. Most importantly, this review of literature displays a gap in knowledge regarding how to best help children of immigrant communities combat barriers, become vaccine literate and catch-up on their routine immunizations.

In summary, this Doctor of Nursing Project sought to answer the following question: Does the introduction of an educational program for pediatric providers focused on barriers to routine immunizations amongst immigrant children increase provider knowledge in navigating barriers in the clinical setting? In alignment with the CDC's "Let's RISE" initiative, the pediatric provider must be a trusted source of information regarding vaccine preventable diseases and immunizations. There is a need for provider education programs with an emphasis on the role of culture on the perception of immunizations for immigrant children and their parents and/or caregivers in the post-pandemic world.

Purpose

The purpose of this quality improvement project was to increase provider knowledge on barriers to routine immunization amongst children of immigrant families through the introduction of a provider-based vaccine education program.

PICO

Does the introduction of an educational program for pediatric providers focused on barriers to routine immunizations amongst immigrant children increase provider knowledge in navigating barriers in the clinical setting? *Population:* Pediatric providers (physicians, nurse practitioners, nurses and medical assistants) *Intervention:* Educational program focused on

barriers to routine immunizations amongst immigrant children *Comparison:* No educational program *Outcome:* Increased provider knowledge.

Primary DNP Project Goal

One of the goals of Healthy People 2030 is to reach a routine vaccination goal of 95% for children in the United States (United States Department of Health and Human Services). According to the most recent national statistic, the country is at 93% (Seither et al., 2023). The goal of this quality improvement project was to increase provider knowledge on barriers to routine immunization amongst children of immigrant families through the introduction of a provider-based vaccine education program with a focus on navigating vaccine hesitancy within this population. Currently, the pediatric routine immunization rate at the clinical site, a pediatric primary care clinic in Miami, Florida, is roughly 28% amongst patients aged 2 and under.

According to an interview with one of the advanced practice registered nurse (APRN) in the practice, delays in vaccination are observed to be due to lack of parental knowledge regarding the importance of well child exams and the correspondent immunization schedule. Often, patients will miss appointments and be delayed on vaccinations by the next time they arrive in the office. Additionally, a large component is the fact that many patients who are seen at the clinical site are recent immigrant children without a vaccine record. This circumstance requires starting from the beginning, as if they were newborns. There is currently no institution-specific education for providers about navigating routine childhood immunizations amongst an immigrant population. Occasionally, representatives from the vaccine manufacturer will visit the practice and give presentations, but nothing is standardized. Vaccines for Children (VFC) has an online module that must be completed yearly, but that is the extent of what is required. For this

reason, this site was appropriate for implementation of a pediatric provider vaccine education program.

List of SMART Goals & Outcomes

1. The first SMART goal was to assess provider understanding of the barriers to immunizations amongst immigrant children in the specific clinical site.
2. The second SMART goal was to increase provider knowledge of childhood catch-up immunization knowledge through an educational presentation.
3. The third SMART goal was to provide information to providers regarding culturally competent care for immigrant children and families through the use of educational materials.
4. The fourth SMART goal was to assess provider ability to describe the concept of vaccine hesitancy in relation to immigrant families after undergoing education.
5. The fifth SMART goal was to discuss communication techniques that can allow the pediatric provider to navigate parental vaccine hesitancy in the clinical setting.

SWOT Analysis

Prior to the intervention, a SWOT analysis was conducted in the environment where the quality improvement project was done. This allowed for a greater understanding of the strengths, weaknesses, opportunities and threats found in the clinical site. In this case, the overall goal of the project was to increase provider knowledge and confidence regarding barriers to routine immunization for immigrant children.

Strengths (S)

A strength can be defined as a quality that will have a positive effect on the project's outcome (Baghouri, 2023). The strengths of the clinical site, Citrus Health Pediatric Primary

Care Clinic, include the presence of passionate pediatric providers who are willing to learn in order to improve clinical practice. Because Citrus Health is a Federally Qualified Health Center funded by federal grants, the United States Department of Health and Human Services is particularly invested in ensuring patients' health care needs are fully met at this institution, which can also be seen as a strength (*Mission & Vision*).

Weaknesses (W)

A weakness refers to a quality of the clinical site that may cause a negative effect on project outcomes (Baghouri, 2023). One main weakness was the current low routine childhood immunization rate of the practice at 28%. This low immunization rate has multiple potential causes. First, it may be due to a lack of education for providers and ancillary medical staff regarding the importance of the catch-up immunization schedule for infants, children and adolescents. There may be insufficient time during visits to address gaps in immunization with families due to increasing volume of patients. Furthermore, a pediatric nurse practitioner in the clinic states that children often miss their well-child visits, which may be the result of clinic management and lack of communication with families for upcoming visits. Additionally, there is no culturally specific guidelines for immigrant children that could improve their care in the practice. The clinic also has about six pediatric providers (physicians and nurse practitioners) and five ancillary medical staff members, which is a relatively small sample size for a research project.

Opportunities (O)

Opportunities are external factors that may contribute to success of the project (Baghouri, 2023). Citrus Health Network was primarily started as a community mental health center, expanding to primary care after increased funding (*Mission & Vision*). Many of the individuals

who receive medical care in these clinics are from low-income families who have recently immigrated to the United States, particularly Cuba. There is an immense opportunity here to study this immigrant population consisting of children and their families allowing us, as pediatric providers, to further understand how to ensure this group of children becomes immunized in a timely and successful manner.

Threats (T)

Threats refer to external factors that can hinder the project's success (Baghouri, 2023). Timeliness of the DNP project is a threat, as there is only so much time to be able to study a phenomenon such as the effect of immigration on routine childhood immunizations. For this reason, the focus is on increasing provider knowledge of the effect of immigration on vaccinations in children, which can be portrayed as the first step toward overall immunization success amongst this population of individuals. Because Citrus Health is federally funded, it is possible that the clinical site can stop a research project at any point if it is not considered beneficial to the practice.

Definition of Terms

Barriers to childhood vaccinations: Refers to the multiple reasons children are not immunized against vaccine-preventable illness in a timely manner.

Catch-up immunization schedule: A schedule created by the Centers for Disease Control and Prevention (CDC) that provides minimum and maximum intervals between immunization doses, based on age, for children whose vaccinations have been delayed.

Children in immigrant families: Children who are foreign-born or have at least one parent who is foreign-born (American Academy of Pediatrics, 2019).

Health Inequity: A systematic difference in the health status of a population that have significant social and economic costs to individuals and families (World Health Organization, 2018).

Healthy People 2030: A set of data-driven national measurable objectives to improve health and well-being, set by the United States Department of Health and Human Services, between the years 2020 and 2030.

Immigrant: A person living in a country other than that of his or her birth (migrationpolicy.org)

Immunization: The process by which a person becomes protected against a disease through vaccination; often used interchangeably with vaccination (Centers for Disease Control & Prevention).

Pediatric Primary Health Care: Continuous, comprehensive and coordinated care that is both accessible and affordable to meet health needs of infants, children, adolescents and young adults in a family-centered environment (Boudreau et al., 2022).

Vaccine: A preparation that is used to stimulate the body's immune response against diseases, usually administered through needle injection, by mouth, or via nasal spray (Centers for Disease Control and Prevention, 2021).

Vaccine hesitancy: Reluctance or refusal to have oneself or one's child vaccinated against an infectious disease; a complex and context-specific term influenced by multiple factors (MacDonald, 2015).

Vaccine preventable disease (VPD): Infectious diseases caused by viruses or bacteria that can be prevented by vaccines. These diseases include: varicella, diphtheria, influenza, hepatitis A, hepatitis B, measles, meningitis, *Haemophilus influenzae type b*, human papillomavirus, mumps, poliovirus, pneumococcal, rotavirus, rubella, tetanus, pertussis, respiratory syncytial virus (RSV) and COVID-19 (Centers for Disease Control and Prevention).

Conceptual Underpinning and Theoretical Framework of the Project

Choosing to vaccinate one's child is considered a health behavior. Evidence has shown that interventions with the overall goal of increasing immunization rates have proven to be most successful when rooted in theoretical frameworks focused on behavioral change. The Health Belief Model (HBM), first introduced by Hochbaum & Rosenstock in the 1950s, explores and predicts health behaviors based on belief patterns. They described three main factors contributing to the motivation of health behaviors. The first is individual perception of the illness, which includes understood susceptibility and severity. The second refers to modifying factors such as the environment, culture, barriers and cues to action. The final factor is the likelihood of action, which is defined as the perceived benefit of the health behavior minus the perceived barriers to said behavior, resulting in the possibility of the behavior change occurring (Connor & Norman, 2015).

In both the past and present, the HBM has been utilized as a theoretical framework for providers to teach patients about public health efforts. Because childhood immunizations are one of the most important public health successes in history, this framework is appropriate. If a parent or caregiver does not believe the child is susceptible to disease or likely to suffer from severe illness, he or she is less likely to accept the immunizations for the child (Ellithorpe et al., 2022). The HBM also highlights barriers to health behaviors, which in this case are the many barriers to immunization in the immigrant community (Chen et al., 2011).

Rooted in the HBM, parents and caregivers who refuse or delay immunizations for their child are less likely to perceive their child as being at risk for a vaccine preventable disease and are less likely to state that vaccine preventable diseases are current public health concerns. Furthermore, these individuals are more likely to be concerned about efficacy and safety of

vaccines and may show signs of distrust with the healthcare system (Smith et al., 2011). The vaccine education program created for pediatric providers will be created in context of the HBM to train the provider with factual information and communication methods that can lead parents and caregivers in making a conscious decision, rooted in health behavior, to vaccinate their children.

Methodology

The PDSA Cycle

The Plan, Do, Study, Act (PDSA) Cycle was first introduced in the 1920s as a method to implement change with the goal of improving quality. Since its introduction, the PDSA Cycle has been utilized in many healthcare environments to introduce, implement and evaluate change. During the "plan" phase, a problem is identified within the environment that can be improved. The "do" phase involves the implementation of the change through evidence-based methods. In the "study" phase, the outcome is evaluated to see if quality has improved and the problem has been effectively solved. Finally, the "act" phase involves utilizing the information from the cycle and attempting to standardize the knowledge in inspiring a new cycle of change (Katowa-Mukwato et al., 2021). It is important to emphasize that the quality improvement process is cyclic in nature, as identified problems may not be readily nor easily solved. Rather, it takes continuous adaptation of evidence-based practice and knowledge to achieve sustainable change. This quality improvement project was approved by the Florida International University IRB Board in April of 2024.

Setting

The quality improvement project took place in a pediatric primary care clinic in Miami, Florida in May of 2024.

Sample/Participants

The sample consisted of 11 pediatric providers, which included physicians, pediatric nurse practitioners, nurses and medical assistants in the clinic. Each participant was directly involved in patient care.

Protection of Human Subjects

Prior to the intervention, individuals involved in the study were given information regarding the study to ensure informed consent and Protection of Human Subjects, including risks and benefits of participation and methods of data analysis. It is important to note that all participant responses remained confidential and surveys were kept under lock and key once completed.

Project Design and Data Collection

The quality improvement project was quantitative in nature, with a pre and post-test design utilizing an educational intervention survey. The intervention was primarily educational for providers and staff with a focus on childhood immunizations in the immigrant population. It consisted of a thirty minute in-person presentation, created by the DNP student, with information from the Centers for Disease Control & Prevention, American Academy of Pediatrics and Pediatric Infectious Disease Society. Specific topics included a brief overview of the childhood catch-up immunization schedule, priorities for the healthcare of immigrant children, common causes for vaccine hesitancy amongst immigrant families, and evidence-based communication techniques that providers may utilize to increase trust with patients and their parents/caregivers concerning this topic.

The educational intervention survey completed by participants is a modified version of a survey created by Fernandes et al. (2023) assessing healthcare providers' vaccination knowledge,

attitudes and recommendation practices in New York State. The 22-item survey took approximately 20 minutes to complete and is divided into three different sections—vaccine knowledge, vaccine attitudes and vaccine recommendation practices. Hard copies of the survey were given to participants to complete before and after the intervention in order to ensure that data is collected in a timely manner.

Data Analysis

Frequency counts were used to examine the distribution of categorical demographic variables. Prior to conducting parametric tests, the assumption of normality was tested and was found to be violated. Therefore, the Wilcoxon Signed Rank tests were used to determine whether scores assessing Knowledge, Attitudes, and Recommendations changed significantly from pre to post.

Results

Sample Characteristics

Participant demographic characteristics for the sample of 11 participants are provided in Table 1. All participants were female (100%) and ranged in age from 26 to 60 with a mean of 45 (M = 45.1, SD = 11.4. They were mostly Hispanic (91%) but also one participant who identified their Ethnicity as Other (9%). The clinical position or title of the participants included Medical Doctor (27%), Registered Nurses (18%), Advanced Practice Registered Nurses (27%), and Medical Assistants (27%). The number of years of experience varied with 9% reporting less than one year of experience, 9% reporting 1-3 years, 9% reporting 3-5 years, 46% reporting 5-10 years, and 27% reporting 10 or more years of experience. When asked the number of trainings on childhood immunizations in the past year, one participant indicated they did not know or didn't remember taking a training and one participant saying they did not attend any trainings. The

remaining participants had one (9%), two (36%) or three of more trainings (36%) in the past year. For those who had participated in a training, when asked whether these trainings included information on the role of culture on immunizations beliefs, the majority (70%) indicated this content was not included in the trainings.

Table 1. Demographic Characteristics

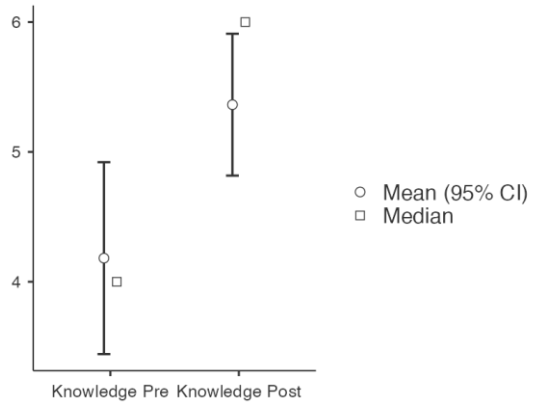
Characteristic	*N* (%)
Clinical Role	
Medical Assistant	3 (27)
Registered Nurse	2 (18)
Advanced Practice Registered Nurse	3 (27)
Medical Doctor	3 (27)
Years in Practice	
< 1 year	1 (9)
1 – 3 years	1 (9)
3-5 years	1 (9)
5-10 years	5 (46)
10 + years	3 (27)
Gender	
Female	11 (100)
Male	0 (0)
Ethnicity	
Hispanic	10 (91)
Other	1 (9)
Trainings on Childhood Immunizations	
None	1 (9)
1	1 (9)
2	4 (36)
3 or more	4 (36)
Did Trainings include Culture	
No	7 (70)
Yes, some	1 (10)
Yes, a lot	2 (20)

Vaccine Knowledge

This portion of the questionnaire assessed correct knowledge regarding frequently asked questions about childhood immunizations. There were a total of 6 statements: “There is a clear link between certain immunizations and autism”, “Multiple vaccines administered in a single

visit overwhelm the immune system", "Vaccines should be deferred during mild illness", "Provider vaccine recommendation is associated with vaccine acceptance", "There have been recent outbreaks of vaccine preventable disease in the United States", and "Social determinants of health influence vaccine compliance." Response options were "True", "False" or "I Don't Know." Knowledge scores were found to change significantly from pretest (M = 4.18) to posttest (M = 5.36), W = 0.00, p = .007. Figure 1 displays the change in Knowledge scores before and after the education program.

Figure 1. Knowledge Change Over Time

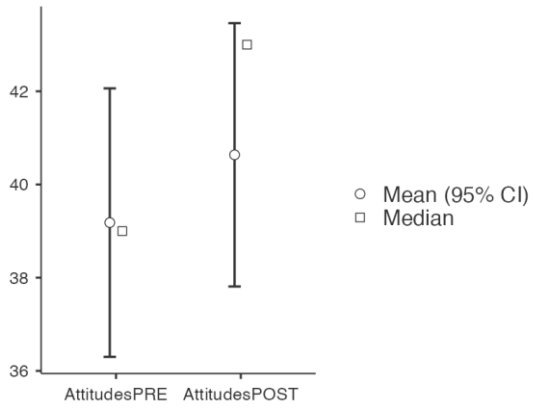


Vaccine Attitudes

The vaccine attitudes portion of the questionnaire assessed provider confidence level in communicating with vaccine hesitant patients and parents, as well as perceived role in successfully immunizing children. Examples of statements included "I am confident in my ability to communicate with vaccine hesitant patients", "Benefits of vaccines outweigh the risks" and "I understand the social drivers of vaccine behavior." Additionally, this portion had two specific questions regarding provider perception of the influenza vaccine including "Influenza infection is not serious enough to warrant annual vaccination" and "The influenza vaccine is

effective in preventing severe influenza". Answer choices were Strongly Agree, Agree, Neutral, Disagree or Strongly Disagree. Attitudes scores were found to be significantly different from pretest (M = 39.18) to posttest (M = 40.64), W = 0.00, p = .021. Figure 2 displays the change in Attitudes before and after the education program.

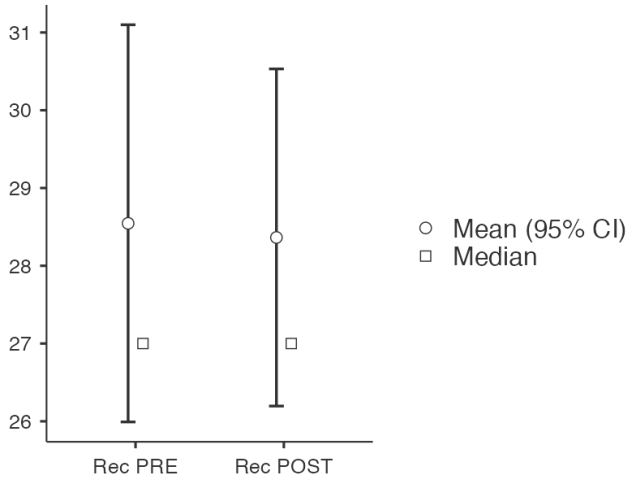
Figure 2. Attitudes Change Over Time



Vaccine Recommendation Practices

The recommendation practices portion of the questionnaire assessed general provider practices. Examples of statements included "I routinely recommend the standard vaccines to all patients", "I routinely ask parents about any cultural beliefs affecting immunization practices" and "I review and recommend immunizations at each patient encounter". Vaccine recommendation practice scores did not change significantly from pretest (M = 28.55) to posttest (M = 28.36), W = 10.00, p = .588. Figure 3 displays the change in behavior scores over time. This lack of a change may be attributed to the fact this set of statements assessed a general standard of care for providers, as opposed to assessing knowledge or confidence before and after the intervention.

Figure 3. Vaccine Recommendations Over Time



Discussion

The goal of this quality improvement project was to determine if a vaccine education program focused on barriers to immunization amongst immigrants with a focus on vaccine hesitancy increased pediatric providers' knowledge, attitudes and vaccine recommendation practices. Both pre-intervention and post-intervention surveys were collected before and after the vaccine education program implemented by the DNP student. Seventy percent of providers reported never attending a vaccine education program that mentioned culture and the role it plays in immunization beliefs and practices. This is an important finding, as implementing a standard of care to perform cultural assessments of families may help determine whether there are cultural reasons for vaccine hesitancy and ultimately alleviate any concerns they may have.

Although the sample size was small (N=11), there was a statistically significant increase in both knowledge and attitudes before and after the education program. A reassuring finding is that all pediatric providers were knowledgeable regarding recent vaccine preventable disease outbreaks in the United States prior to the intervention. After the education program, there was an increase in knowledge regarding social determinants of health affecting vaccine compliance,

as well as the safety of administering multiple immunizations at one time. Most importantly, many providers themselves were not aware that provider education programs were associated with an increase in immunization rates. As for vaccine attitudes, there was an increase in confidence regarding navigating conversations with vaccine hesitant patients, as well as a greater understanding of social drivers of vaccine behaviors. Recommendation practices did not change significantly before and after the vaccine education program. With these findings, it is evident that the foundation for combatting vaccine hesitancy is an increase in provider knowledge and confidence in the subject matter.

Ensuring that medical personnel are appropriately educated in navigating vaccine hesitancy is the first step toward an increase in immunization rates. More research studies are needed in the future in order to assess the effect of provider vaccine education programs on the immigration rates of immigrant children. Providing the patient and their family consistent, factual information regarding vaccines is the priority for a trustworthy parent-provider relationship and ultimately the best care for the child.

Limitations

The quality improvement project resulted in an increase in both provider knowledge and change in attitudes regarding childhood immunizations, however, there are multiple limitations to this study. A small sample size is a limitation, as there is not sufficient data to determine a true effect. It would be beneficial to replicate this study on a larger scale, amongst a variety of pediatric primary care clinics. While the sample size was well distributed amongst roles (27% physicians, 18% registered nurses, 27% advanced practice registered nurses and 27% medical assistants), all participants were female and 10 of the 11 were of Hispanic/Latino ethnicity and there was therefore limited variety in terms of different genders and cultures. There was also a

language barrier present for some participants, which may have affected survey responses. Additionally, time was a limitation for this DNP project, as the pre-intervention survey, educational presentation and post-intervention survey were all done within the same day. Ideally, more time would be allotted between the educational intervention and questionnaire, as well as an additional visit to the clinic 4 weeks after to reassess knowledge, attitudes and recommendation practices over a longer span of time.

Implications for Advanced Practice Nursing

Due to multiple barriers to immunizations, many children of immigrant families were not up to date, which was further exacerbated by the COVID-19 pandemic. As discussed in the review of the literature, the overall goal of a vaccine education program for pediatric providers is to increase immunization rates and enhance the overall well-being of children at a local and national level. The purpose of this quality improvement was to increase provider knowledge regarding barriers to immunizations amongst immigrant children, with a focus on navigating vaccine hesitancy. The next steps for this quality improvement project include replicating the study in multiple pediatric primary care clinics, amongst a variety of providers. The aim should be to educate all providers involved in the direct care of children regarding the importance of culture on vaccine beliefs and practice. This project is only the first step toward further research to determine if these increase in knowledge and change in attitudes can effectively increase childhood immunization rate to over 95%, in accordance with Healthy People 2030 goal.

Nursing Practice Dissemination

As part of the provider education program, a detailed handout with frequently asked questions regarding childhood immunizations and evidence-based responses were distributed to all providers to use in practice. Additionally, the findings of the quality improvement project

were shared with the institution where the provider education program took place. After completion of the project, it was presented at the Florida International University Doctor of Nursing Practice Symposium. The quality improvement project abstract was also submitted to the National Association of Pediatric Nurse Practitioners (NAPNAP) and Florida Nurses Association (FNA) for possible publication.

Conclusions

This quality improvement project explored whether the introduction of an educational program for pediatric providers focused on barriers to routine immunizations amongst immigrant children increased provider knowledge in navigating barriers in the clinical setting. The provider education program was designed by the DNP student with information from the Centers for Disease Control and Prevention, American Academy of Pediatrics Immigrant Toolkit and Pediatric Infectious Disease Society. Based on the data, there was a statistically significant increase in both vaccine knowledge and vaccine attitudes after participants underwent the vaccine education program. Ensuring pediatric medical personnel are adequately trained in navigating vaccine hesitancy and practicing overall cultural competence is instrumental in providing optimal care to immigrant children and their families.

Appendix A

Florida International University Institutional Review Board Approval Letter

FIU | FLORIDA INTERNATIONAL UNIVERSITY

Office of Research Integrity
Research Compliance, MARC 430

MEMORANDUM

To:	Dr. Rosa Roche
CC:	Cristina Damas
From:	Kourtney Wilson, MS, IRB Coordinator KMW
Date:	April 5, 2024
Protocol Title:	"Catching Up the Kids: Implementation of an Educational Program for Pediatric Providers to Overcome Barriers to Immunization Amongst Immigrant Children, A Quality Improvement Project"

The Florida International University Office of Research Integrity has reviewed your research study for the use of human subjects and deemed it Exempt via the **Exempt Review** process.

IRB Protocol Exemption #:	IRB-24-0137	**IRB Exemption Date:**	04/05/24
TOPAZ Reference #:	114129		

As a requirement of IRB Exemption you are required to:

1) Submit an IRB Exempt Amendment Form for all proposed additions or changes in the procedures involving human subjects. All additions and changes must be reviewed and approved prior to implementation.
2) Promptly submit an IRB Exempt Event Report Form for every serious or unusual or unanticipated adverse event, problems with the rights or welfare of the human subjects, and/or deviations from the approved protocol.
3) Submit an IRB Exempt Project Completion Report Form when the study is finished or discontinued.

Special Conditions: N/A

For further information, you may visit the IRB website at http://research.fiu.edu/irb.

KMW

Appendix B

Support Letter from Facility

citrus
HEALTH NETWORK, INC.
FEDERALLY QUALIFIED HEALTH CENTER
4175 WEST 20TH AVENUE • HIALEAH, FL 33012-5875
OFFICE: (305) 424-3100 • FAX: (786) 209-2054

SAC Recommendation Report

Date: June 17, 2024

Type of Application: ☐ Case Study ☐ Conference Presentation ☒ Research Project

Title of Project: Catching up the Kids

Authors: Cristina Lopez Damas

Date of SAC Meeting: October 16, 2023

SAC Recommendation: ☒ **Final approval** Suggestions: ☒ yes ☐ no ☐ **Conditional approval** *(see conditions below)* ☐ **Rejection** Resubmission: ☐ yes ☐ no

Comments from the Committee:

- Committee has approved collaboration with the author on the proposed concept for the project.
- Committee has provided the following suggestions:
  - It was suggested that an adjustment occur to the age question, from a fill-in to a group of different age ranges for the providers to circle.
  - In addition, it was suggested altering the ethnicity question to read as "ethnicity/race, circle all that apply."

Required Follow-up for Research Studies:

- Every 6 months *(for studies with shorter duration; updates are required at midpoint and completion)*
- Within 60 days of the end date on proposal *(summary of findings)*
- Official Results/Product *(when available)*

Please note that any extensions must be requested in writing and any intent to disseminate (publish/present) must be disclosed to the Scholarly Activity Committee.

Please address any questions or concerns in writing to Dr. Melina Visser at mvisser@citrushealth.com or Ashton Sanchez at asanchez@citrushealth.com.

06/17/2024
Date

Melina M. Visser, Psy.D.
Chairperson, Scholarly Activity Committee

S:\Forms-NWD\SAC\SAC Recommendation Report.1018.doc

Appendix C

Recruitment Email Letter

Recruitment Email for "Catching Up the Kids: Implementation of an Educational Program for Pediatric Providers to Overcome Barriers to Immunization Amongst Immigrant Children"

Dear Pediatric Provider and/or Medical Staff Member,

My name is Cristina Lopez Damas and I am a student from the Graduate Nursing Department at Florida International University. I am writing to invite you to participate in my quality improvement project. The goal of this quality improvement project is to increase provider knowledge on barriers to routine immunization amongst children of immigrant families through the introduction of a provider-based vaccine education program with a focus on navigating vaccine hesitancy within this population. You are eligible to participate in this project because you work with patients in the pediatric primary care setting. I am contacting you with permission from the Citrus Health Scholarly Activity Committee.

If you decide to participate in this project, you will be asked to complete and sign a consent form for participation. You will complete a pre-test questionnaire, which is expected to take approximately 10-15 minutes. Then, you will then be asked to attend a 30-minute educational presentation. You will then be asked to complete the post-test questionnaire, which is expected to take approximately 10-15 minutes. No compensation will be provided.

Participation in this research project is completely voluntary. If you have any questions about the project, please email or contact me at clope336@fiu.edu or 305-934-3484

Thank you very much for your time.

Sincerely,

Cristina Lopez Damas

Appendix D
Informed Consent

FIU | FLORIDA INTERNATIONAL UNIVERSITY

CONSENT TO PARTICIPATE IN A QUALITY IMPROVEMENT PROJECT
"Catching Up the Kids: Implementation of an Educational Program for Pediatric Providers to Overcome Barriers to Immunization Amongst Immigrant Children"

PURPOSE OF THE PROJECT
You are being asked to be in a quality improvement project. The goal of this project is to increase provider knowledge on barriers to routine immunization amongst children of immigrant families through the introduction of a provider-based vaccine education program with a focus on navigating vaccine hesitancy within this population.

DURATION OF THE PROJECT
Your participation will require about 60 minutes of your time for a pretest questionnaire, 30-minute educational presentation and posttest questionnaire.

PROCEDURES
If you agree to be in the project, we will ask you to do the following things:
1. Complete a demographic questionnaire, which includes general information such as age, gender, position in practice; and a pretest with questions related to vaccine knowledge, attitudes and recommendation practices.
2. Attend a 30 minute in-person educational presentation focused on topics such as childhood immunizations, barriers to immunization amongst immigrant children, and communication techniques to combat vaccine hesitancy within this population.
3. Complete a posttest questionnaire.

RISKS AND/OR DISCOMFORTS
There are no foreseeable risks with you for participating in this project.

BENEFITS
The following benefits may be associated with your participation in this project: An increase in knowledge of vaccine preventable diseases and the Centers for Disease Control and Prevention (CDC) childhood immunization catch-up schedule, a deeper understanding of barriers to immunization that immigrant children may face, reasons for vaccine hesitancy amongst this population, and communication techniques to combat vaccine hesitancy and cultivate a trusting provider-patient relationship.

ALTERNATIVES
There are no known alternatives available to you other than not taking part in this project. The educational presentation will be provided to the participants in this project at no cost.

CONFIDENTIALITY
The records of this project will be kept private and will be protected to the fullest extent provided by law. If, in any sort of report, we might publish, we will not include any information that will make it possible to identify you as a participant. Records will be stored securely, and only the project team will have access to the records.

COMPENSATION & COSTS
There is no cost or payment to you for receiving the health education and/or participating in this project.

RIGHT TO DECLINE OR WITHDRAW
Your participation in this project is voluntary. You are free to participate in the project or withdraw your consent at any time during the project. Your withdrawal or lack of participation will not affect any benefits to which you are otherwise entitled. The investigator reserves the right to remove you without your consent at such time that they feel it is in the best interest.

RESEARCHER CONTACT INFORMATION
If you have any questions about the purpose, procedures, or any other issues relating to this research project, you may contact Cristina Lopez Damas at 305-934-3484, clope336@fiu.edu or Dr. Rosa Roche at rroche@fiu.edu.

IRB CONTACT INFORMATION
If you would like to talk with someone about your rights of being a subject in this project or about ethical issues with this project, you may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu.

PARTICIPANT AGREEMENT
I have read the information in this consent form and agree to participate in this project. I have had a chance to ask any questions I have about this project, and they have been answered for me. I understand that I will be given a copy of this form for my records.

_____ _____
Signature of Participant Date

_____
Printed Name of Participant

_____ _____
Signature of Person Obtaining Consent Date

Appendix E
Pretest and Posttest Questionnaire

FIU | FLORIDA INTERNATIONAL UNIVERSITY

Pretest and Posttest Questionnaire:
Catching Up the Kids

INTRODUCTION

The primary aim of this quality improvement project is to increase provider knowledge on barriers to routine immunization amongst children of immigrant families through the introduction of a provider-based vaccine education program with a focus on navigating vaccine hesitancy within this population.

Please answer the question below to the best of your ability. These questions are meant to measure knowledge, attitudes and recommendation practices surrounding childhood immunizations.

PERSONAL INFORMATION

1. **Gender:** Male Female Other
2. **Age:** _____
3. **Ethnicity:**

   Hispanic Caucasian African American Asian Other
4. **Position/Title:** _____
5. **Years of Experience:**

   < 1 year 1-3 years 3-5 years 5-10 years 10+ years

6. How many trainings have you attended in the **past year** that focused on childhood immunizations?

None 1 2 3 More than 3 I don't know/I don't remember

7. If you did attend a training, did the content include content about the effects of culture on immunization beliefs?

N/A No Yes, a little. Yes, some of the content. Yes, a lot of content

QUESTIONNAIRE *(Modified version, Fernandes et al. [2023])*

Vaccine Knowledge

(Answer Choices: True, False, I Don't Know)

1. There is a clear link between certain vaccinations and autism.

   True False I Don't Know

2. Multiple vaccines administered at a single visit overwhelm the immune system.

   True False I Don't Know

3. Vaccines should be deferred during mild illness.

   True False I Don't Know

4. Provider vaccine recommendation is associated with vaccine acceptance.

   True False I Don't Know

5. There have been recent outbreaks of vaccine preventable diseases in the United States.

   True False I Don't Know

6. Social determinants of health influence vaccine compliance.

   True False I Don't Know

Vaccine Attitudes

(Answer Choices: Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)

7. I am confident in my ability to communicate with vaccine hesitant patients.

Strongly Agree Agree Neutral Disagree Strongly Disagree

8. Recommending and/or administering vaccines is within my scope of practice.

Strongly Agree Agree Neutral Disagree Strongly Disagree

9. I have a responsibility to ensure that my patients are fully vaccinated.

Strongly Agree Agree Neutral Disagree Strongly Disagree

10. Other providers recognize my role in vaccinating patients.

Strongly Agree Agree Neutral Disagree Strongly Disagree

11. Vaccines for diseases uncommon in the United States are still important.

Strongly Agree Agree Neutral Disagree Strongly Disagree

12. Benefits of vaccines outweighs the risks.

Strongly Agree Agree Neutral Disagree Strongly Disagree

13. I understand the social drivers of vaccine behavior.

Strongly Agree Agree Neutral Disagree Strongly Disagree

14. Influenza infection is not serious enough to warrant annual vaccination.

Strongly Agree Agree Neutral Disagree Strongly Disagree

15. Influenza vaccine is effective in preventing severe influenza.

Strongly Agree Agree Neutral Disagree Strongly Disagree

Vaccine Recommendation Practices

(Answer Choices: Always, Often, Sometimes, Never, Not Applicable to My Practice)

16. I routinely recommend the standard vaccines to all patients.

Always Often Sometimes Never Not Applicable

17. I routinely ask parents about any cultural beliefs affecting immunization practice.

Always Often Sometimes Never Not Applicable

18. I routinely initiate vaccine discussions with my patients.

Always Often Sometimes Never Not Applicable

19. I review and recommend immunizations at each patient encounter.

Always Often Sometimes Never Not Applicable

20. I routinely recommend the influenza vaccine to my patients.

Always Often Sometimes Never Not Applicable

21. I routinely recommend the influenza vaccine to my pregnant mothers.

Always Often Sometimes Never Not Applicable

22. I routinely recommend the pertussis booster (Tdap) vaccine to pregnant women.

Always Often Sometimes Never Not Applicable

Thank you for your participation!

Reference

Fernandes, A., Wang, D., Domachowske, J. B., & Suryadevara, M. (2023). Vaccine knowledge, attitudes, and recommendation practices among health care providers in New York State. *Human Vaccines & Immunotherapeutics*, *19*(1). https://doi.org/10.1080/21645515.2023.2173914

Appendix F

CITI PROGRAM

Completion Date 28-Sep-2021
Expiration Date 27-Sep-2024
Record ID 45364124

This is to certify that:

Cristina Lopez

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Basic/Refresher Course - Human Subjects Research
(Curriculum Group)
Biomedical Human Research Course
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

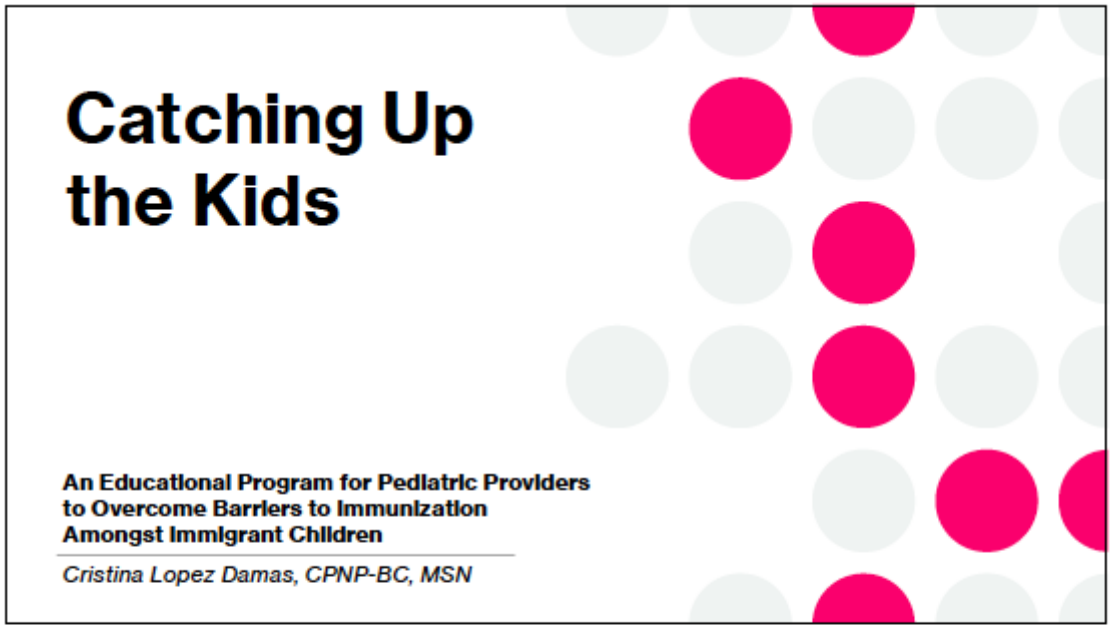
Florida International University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w69b271e3-782e-485a-acd4-96031339a07b-45364124

Appendix G

Provider Education Program Presentation



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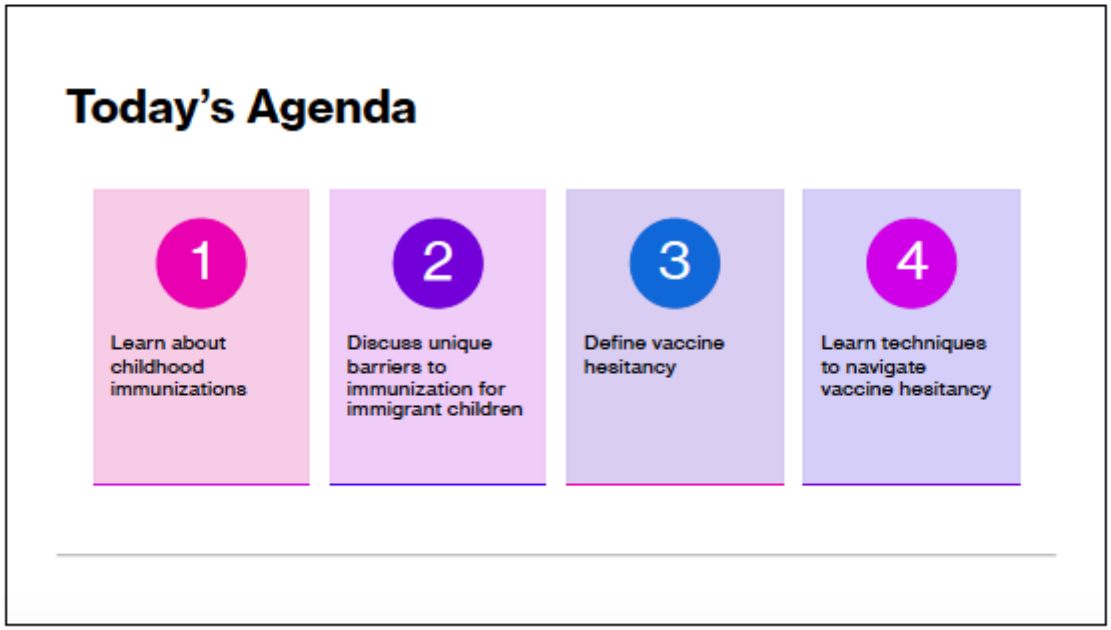

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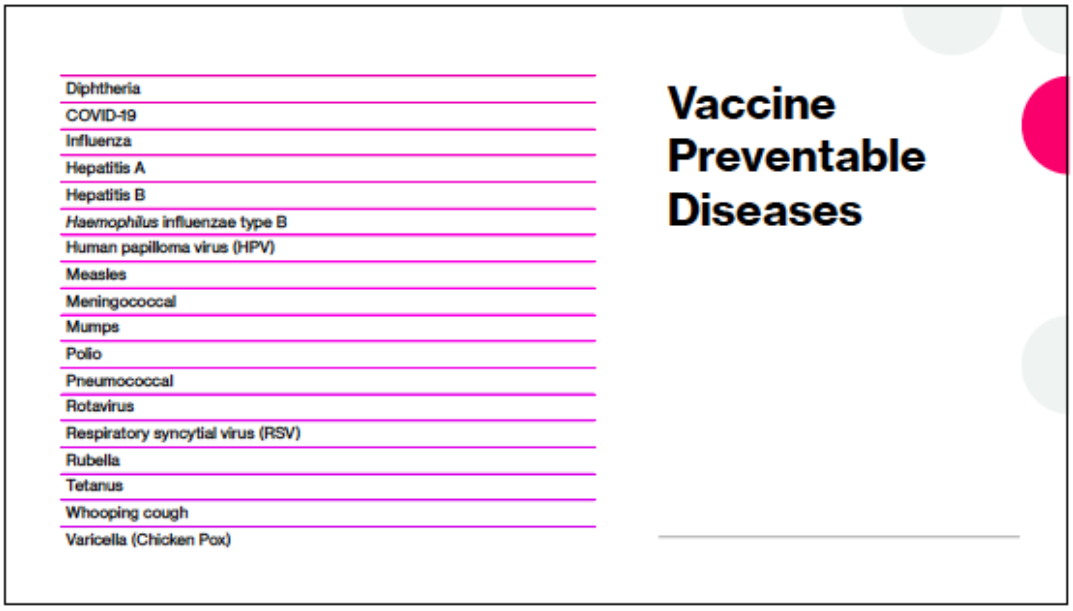

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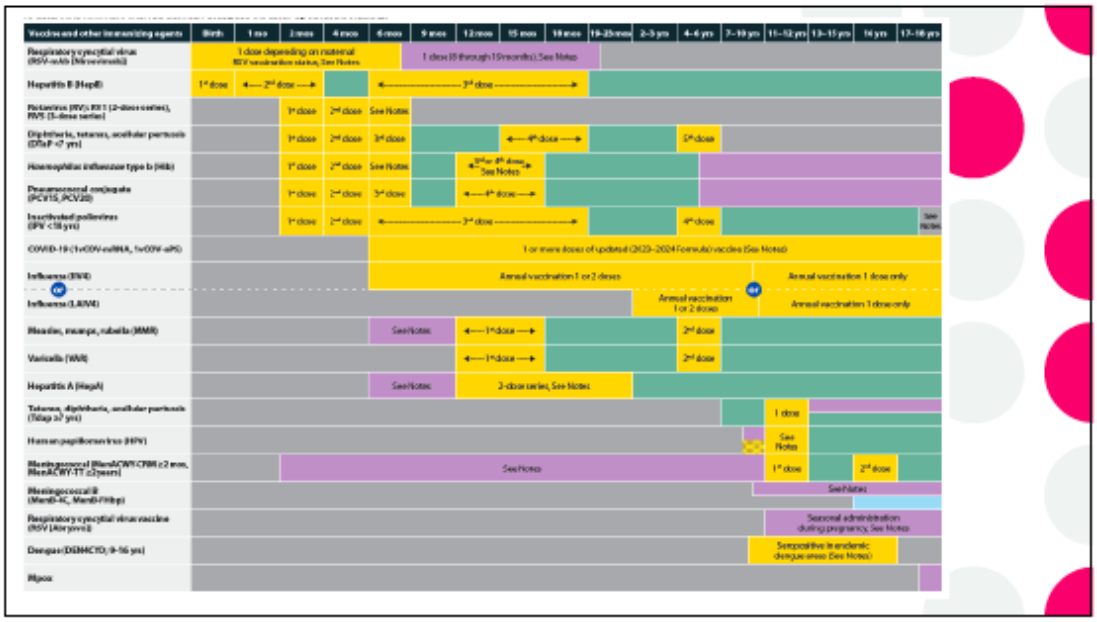


5

Current Statistics

- After the COVID-19 pandemic, an **estimated 25 million children** were left under-immunized due to a decrease in preventive care visits
- During the 2021-2022 school year, **93% of kindergarten children** were fully vaccinated
- Rise in measles outbreaks nationwide
- Foreign-born children are less likely to complete the immunization series compared to United States native children

(Centers for Disease Control & Prevention) (Seither et al., 2023)

6

Unique Barriers for Immigrants

(Deal et al, 2023)

- Mistrust in the healthcare system
- Gaps in knowledge
- Overall access to care
- Concerns of safety
- Differences in immunization practices in their home country
- Cultural beliefs

7

"Let's RISE" Campaign

- The CDC created the "Let's RISE" (Routine Immunizations on Schedule for Everyone) Campaign to catch up children on routine immunizations after COVID-19
- Calls on pediatric providers to be a trusted source of factual information, crucial for immigrant children and their families navigating the system
- Dual goal of helping children be up-to-date on immunizations, as well as ensuring there is equitable access
- **Provider focused education has proven to increase vaccination rates**

8

Vaccine Hesitancy

- The delay in acceptance or refusal of vaccination despite availability of vaccination services
- Considered a threat to public health
- Fall along a spectrum of variable degrees
- Receiving a vaccine is also closely associated with perceived risk or susceptibility
- Social determinants of health are catalysts to vaccine hesitancy (i.e. financial difficulties or lower levels of education)

(World Health Organization)
(Gonzalez et al., 2023)

9

Common Questions & Answers About Vaccines

- Are vaccines safe?
- What are common side effects of vaccines?
- Is there a link between immunizations and autism?
- What are the risks and benefits of vaccines?
- Am I overloading my child's immune system?
- Why are we vaccinating against diseases that are no longer present in the United States?
- Is the influenza vaccine necessary?

(Centers for Disease Control & Prevention)

10

Starting the Conversation

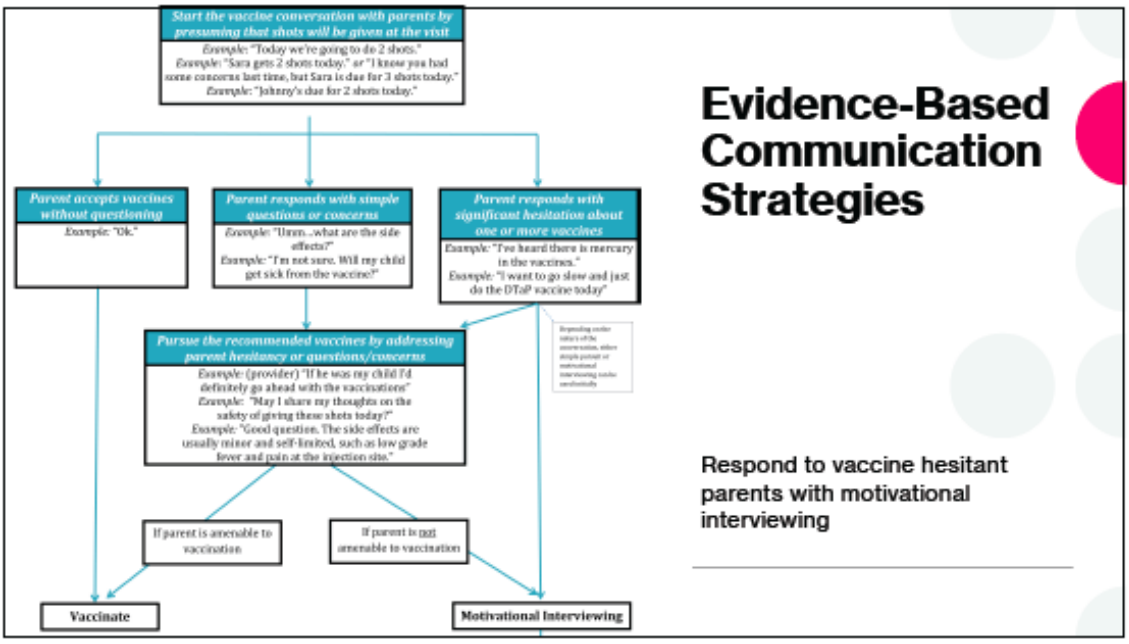
- Higher vaccine receipt among children whose parents receive a strong clinician recommendation
- Use health care experience, data, evidence and statistics of vaccine effectiveness
- Presumptive format (vs. participatory) to initiate conversation associated with increased vaccine intake

11

Communication Techniques

Listen and acknowledge concerns	Promote partnership with parents	Discuss cultural beliefs that may affect vaccine attitudes	Clarify and reaffirm parents' correct beliefs about immunizations and modify misconceptions
Explain the concept of immunity and who benefits from vaccines	Motivational interviewing	Presumptive vs. participatory recommendations	Provide culturally sensitive resources for parents

12



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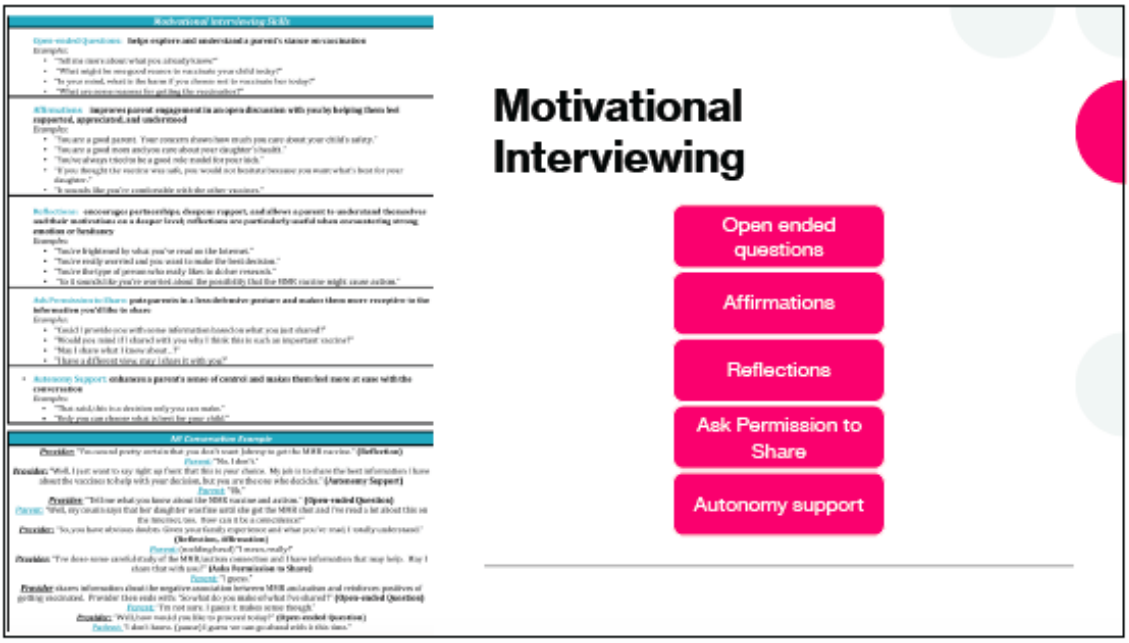

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Trusted Resources for Providers

- American Academy of Pediatrics (AAP) has unique resources for immigrant health and navigating conversations with parents regarding childhood immunizations
- The Pediatric Infectious Disease Society (PIDS) has a comprehensive vaccine education program available free of cost for providers
- Centers for Disease Control and Prevention also has excellent factual resources for providers and parents regarding childhood immunizations

15

In Summary

- Childhood immunizations are safe and effective
- COVID-19 pandemic resulted in general childhood routine immunization rates to decrease
- Barriers to immunization for immigrants remain prevalent and vaccine hesitancy continues to rise
- **A trustworthy, culturally sensitive pediatric provider trained in communication techniques to combat vaccine hesitancy has been proven to increase immunization rates and the overall well being of children**

16

Questions

17

Thank You!

Feel free to email with any questions, comments or general feedback to clope336@fiu.edu.

18

Appendix H

Provider Handout

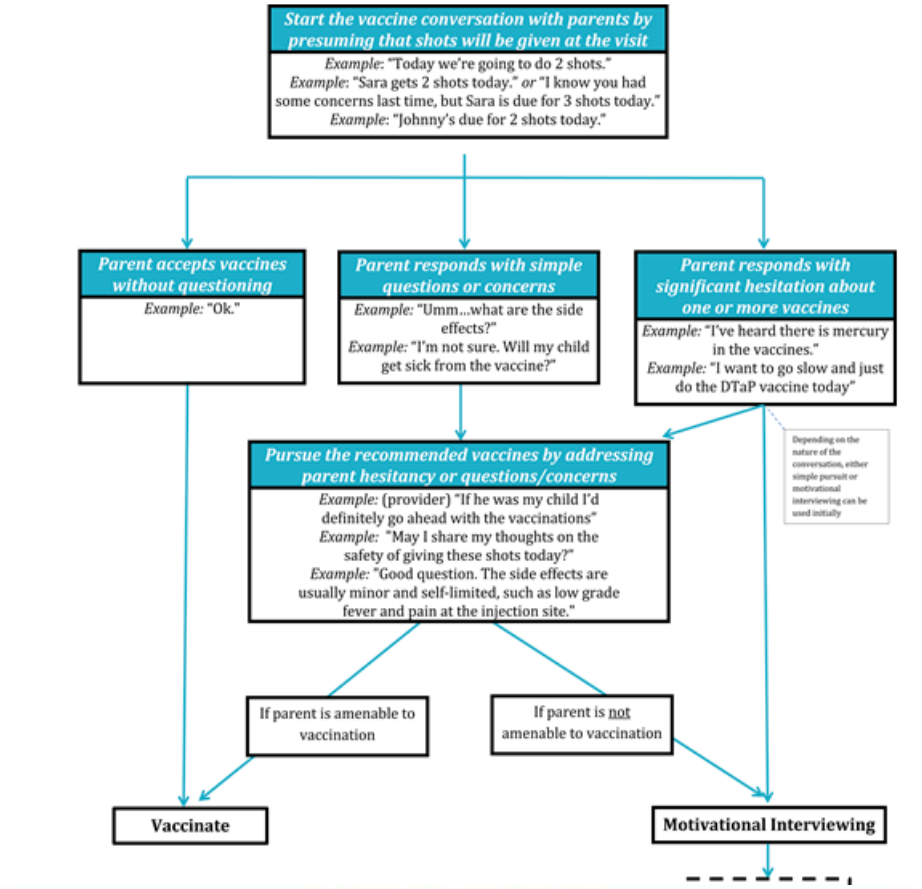
Common Misconceptions and Myths About Immunizations

Claims	Facts
"Natural" methods of enhancing immunity, such as contracting the disease and breastfeeding, are better than vaccinations.	Vaccinations are the safest way to achieve immunity; having immunity the "natural way" means being sick with a potentially very serious infectious disease. Immunity from a preventive vaccine provides protection against disease when a person is exposed to it in the future. That immunity is usually similar to what is acquired from natural infection, although several doses of a vaccine may have to be administered for a child to develop an adequate immune response. Although breastfeeding has many benefits, including immunologic, it does not provide anywhere near the same level of protection from vaccine-preventable diseases as vaccines.
Giving multiple vaccines at the same time causes an "overload" of the immune system.	Vaccination does not overburden a child's immune system; the recommended vaccines use only a small portion of the immune system's "memory." Although the number of unique vaccines administered has risen over recent decades, the number of antigens administered has decreased because of advances in science and manufacturing. The National Academy of Medicine (NAM) has concluded that there is no evidence that the immunization schedule is unsafe.
Vaccines are ineffective.	Vaccines have spared millions of people the effects of devastating diseases.
Before the use of vaccinations, these diseases had begun to decline because of improved nutrition and hygiene.	In the 19th and 20th centuries, some infectious diseases began to be better controlled because of improvements in sanitation, clean water, pasteurized milk, and pest control. However, vaccine-preventable diseases decreased dramatically after the vaccines for those diseases were approved and were administered to large numbers of children.
Vaccines cause poorly understood illnesses or disorders, such as autism, sudden infant death syndrome (SIDS), immune dysfunction, diabetes, neurologic disorders, allergic rhinitis, and eczema.	These claims are false. Multiple, high-quality scientific studies have failed to substantiate any link between vaccines and these health conditions. See NAM reports.
Vaccines weaken the immune system.	Vaccines actually strengthen the immune system. Vaccinated children have decreased risk of infections. Importantly, natural infections like influenza, measles, and varicella (chickenpox) can weaken the immune system, increasing the risk of other infections.
Giving many vaccines at the same time is untested.	New vaccines are tested in concomitant use studies with existing vaccines that are administered on the same or overlapping schedule. These studies are performed to confirm that new vaccines do not affect the safety or effectiveness of existing vaccines administered at the same time and that existing vaccines administered at the same time do not affect the safety or effectiveness of new vaccines.
Vaccines can be delayed, separated, and spaced out without consequences.	Many vaccine-preventable diseases occur in early infancy. Optimal vaccine-induced immunity may require a series of vaccines over time. Any delay in receiving age-appropriate immunization increases the risk of diseases that vaccines are administered to prevent. Spacing out vaccines may also have psychological consequences, because many more office visits will be associated with injections.

Adapted from American Academy of Pediatrics. *Red Book: 2021 Report of the Committee on Immunization Practices*. Kimberlin DW, Barnett ED, Lynfield R, Sawyer MH, eds. 32nd ed. American Academy of Pediatrics; 2021; and Myers MG, Pineda D. *Do Vaccines Cause That? A Guide for Evaluating Vaccine Safety Concerns*. Immunizations for Public Health; 2008:79.

Recommended Approach to Vaccine Conversations Based on Existing Evidence

Reprinted from: *Vaccine*, 41(10), O'Leary ST, Spina CI, Spielvogle H, et al. Development of PIVOT with MI: a motivational interviewing-based vaccine communication training for pediatric clinicians. Pages 1763–1764, © 2023, with permission from Elsevier.



Motivational Interviewing Skills

Open-ended Questions: **helps explore and understand a parent's stance on vaccination**

Examples:

- "Tell me more about what you already know?"
- "What might be one good reason to vaccinate your child today?"
- "In your mind, what is the harm if you choose *not* to vaccinate her today?"
- "What are some reasons for getting the vaccination?"

Affirmations: **improves parent engagement in an open discussion with you by helping them feel supported, appreciated, and understood**

Examples:

- "You are a good parent. Your concern shows how much you care about your child's safety."
- "You are a good mom and you care about your daughter's health."
- "You've always tried to be a good role model for your kids."
- "If you thought the vaccine was safe, you would not hesitate because you want what's best for your daughter."
- "It sounds like you're comfortable with the other vaccines."

Reflections: **encourages partnerships, deepens rapport, and allows a parent to understand themselves and their motivations on a deeper level; reflections are particularly useful when encountering strong emotion or hesitancy**

Examples:

- "You're frightened by what you've read on the Internet."
- "You're really worried and you want to make the best decision."
- "You're the type of person who really likes to do her research."
- "So it sounds like you're worried about the possibility that the MMR vaccine might cause autism."

Ask Permission to Share: **puts parents in a less defensive posture and makes them more receptive to the information you'd like to share**

Examples:

- "Could I provide you with some information based on what you just shared?"
- "Would you mind if I shared with you why I think this is such an important vaccine?"
- "May I share what I know about...?"
- "I have a different view, may I share it with you?"

- **Autonomy Support:** **enhances a parent's sense of control and makes them feel more at ease with the conversation**

Examples:

- "That said, this is a decision only you can make."
- "Only you can choose what is best for your child."

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