


4-2019

Implementation of the Vaccines for Children Program in A Midwest, Urban Clinic Dedicated to the Underserved Population

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Implementation of the Vaccines for Children Program in A Midwest, Urban Clinic Dedicated to
the Underserved Population

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Abstract

Background: Low immunization rates weaken herd immunity and endanger children. The Safety Net Health Clinic (SNHC) study site serves an underprivileged and refugee population with significantly lower than ideal coverage. Series completion disparities persisted after control for demographic, access-to-care, poverty and language effects (Varan et al, 2016). **Objectives:** SNHC implemented the Vaccines for Children (VFC) program in order to increase the vaccination rates among the underserved population. **Methods:** As an efficacy study, the project focused on three major areas in the VFC implementation – cost, staff preparedness and patient need. Cost was determined by utilizing electronic medical records (EMR) and budgets. The need and preparedness parts of study were correlational analyses using convenience sampling. Preparedness study required staff training for appropriate policies and procedures. Staff knowledge and readiness was assessed with focus group and objective surveys from pre and post training seminar.

Finally the study addressed need with vaccination rates contrasted by vaccine specific series completion for age cohorts, not for individual patients. Vaccination series completion rates were determined by age cohorts and compared to pre-implementation rates with Chi-squared tests. Vaccine series completion rates were compared to state and national data. Desire for VFC was surveyed from patients. **Results:** The study found that there was indeed a need for VFC as well as a staff prepared to implement the program. The clinic's preparation can be improved due to the issues with refrigeration. **Conclusion:** The VFC program is a good fit for SNHC and should increase vaccination rates. Data will be entered into the EMR as part of routine health care documentation and is retrievable in the EMR reporting function by vaccination type and date parameters to assess series completion rates. **Implications:** The VFC program implementation was approved. SNHC should explore offering pediatric care.

Keywords: Vaccines for Children, SNHC, staff preparedness, underserved population, Michigan.

Acknowledgements

I would like to thank my advisory committee who have been an immense help. I also would not have done this without the support of my wife and children. The entire staff of SNHC has been an immense inspiration as their dedication to both professionalism and the patients has been an amazing thing to watch and participate in.

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Vaccination has been instrumental in preserving life while eradicating or nearly eradicating several diseases including polio, smallpox, rubella and mumps. “Vigorous vaccination practices largely eradicated measles in the western hemisphere in the 1990s” (Lobo 2016, p. 262). However, there are several barriers to vaccination. In Michigan, the vaccination rate is 29th among the states (XXXX Department of Health and Human Services (XDHHS), 2018). According to the XDHHS, the flu vaccination rate in the county, is less than 50%. (see Appendix A). Children from underserved populations in particular face barriers including an inability to find health clinics, frequent relocation and limited or lack of insurance. (Ezeonwu, 2018). Refugees and other immigrants often face additional barriers to receiving necessary immunizations (Lifson, Thai & Hang, 2001). These issues affect not only their immunization schedules but also their ability to secure health care. Fewer vaccinated children means that herd immunity is compromised. The absence of herd immunity has placed many more children in danger, particularly children who can’t be vaccinated (Lobo, 2016).

The Vaccines for Children (VFC) program is a solution to maintaining an immunized population. Related to the National Center for Immunization and Respiratory Diseases (NCIRD), this federally funded program provides vaccines to children whose parents are unable to pay for vaccinations. (NCIRD, 2018). With the VFC program, vaccines are bought at a discount and distributed to state health departments, clinics, and primary care practices for administration to eligible children. Theoretically, this program should improve child vaccination rates. Since the SNHC has a direct interest in meeting the needs of underserved populations, the organization requested assistance in assessing the feasibility of the VFC as well as the implementation.

Ethics and Human Subjects Protection

This project took data from public sources including county population surveys, primarily of the immunization rates among certain populations. Human subjects were not included in the project. However, should the project and future studies require human subjects, privacy will be safeguarded using informed consent forms and anonymous surveys. An application for review and approval or exemption of this project was received from the student's University Human Research Review Committee's for Institutional Review Board (IRB). This project is determined as a quality improvement project (see Appendix B). No project activities will commence until the review is completed and Board approval is granted. The purpose and scope of this project are limited to evidence-based practice improvement or quality improvement. No identifiable patient information was or will be collected.

Assessment of the Organization

An organizational assessment is a snapshot of an organization's needs. It gives a baseline about where improvement might need to be addressed (Moreno, Girard, & Foad, 2018). It allows a company to gain valuable information on their performance. An organizational assessment will help a company excel, improve, grow, thrive, strengthen the organization, and remain healthy. The organization assessed in this project is an SNHC, which provides care for the uninsured and underserved population in Grand Rapids (Austin, 2017). Specific assessment of this organization helped identify ways of improving performances, specifically targeting the needs of the VFC program. An organizational assessment was conducted using the Burke-Litwin (1992) Model of Organizational Performance and Change. Furthermore, the strengths, weaknesses, opportunities, and threats (SWOT) analysis of the clinic identified methods to improve performances, and specifically target the needs of the VFC program (see Appendix C).

The SNHC project and quality manager introduced the VFC program's needs by providing the SNHC's patients' data. Additionally, the DNP student interviewed the President of SNHC. During the interview, the researcher collected information about the clinic including: organizational vision, goals, budget, patient population, and primary stakeholders. The organizational assessment was conducted by using a framework and a tool, with the goal of implementing a new VFC program. The assessment revealed that the majority of the patient population of the SNHC consists of an underserved Latino population. Many clinic patients have no immunization record. In many cases, immunizations are not up to date. Furthermore, the DNP student learned that the clinic limits its flu vaccine to medical professionals who works at the SNHC, but the organization has not had resources to distribute the vaccine to the general public. These vaccines were not stored to standards.

This project focuses on the clinical question of what is required for the organization to implement the VFC program, and how implementation will impact vaccination rates of this population. The VFC program is a benefit to the organization and will be required in the long term. Since the VFC program is already in the process of being implemented, the study assessed any possible issues with the implementation.

Framework for Assessment

The framework for this assessment is the Burke & Litwin Model. Litwin hypothesized that different leadership styles create different organizational climates. Each leadership style appeals to different stakeholder motives and needs (Burke 2017). The Burke & Litwin model emerged from the organizational climate studies of the 1960s and was more fully developed throughout the 1970s and 1980s as Burke and Litwin worked as organizational change consultants. Organizational change is based on the psychological principles that affect the

corporate viewpoints of the stakeholders. The major part of the framework involves causation between psychological and organizational variables.

The model in Appendix D confirms the open system way of thinking. The external environment serves as the input dimensions and the individual and organizational performance serve as the output dimension (Burke, 2014). The remaining boxes represent the primary dimensions. The feedback loop connects the input with the output and serves as organizational outcomes-products. Services affect the external environment, using such factors as customer satisfaction surveys.

Forces or variables outside the organization that influence the organizational performance (Burke & Litwin, 1992) include customer behavior and satisfaction, market conditions, political circumstances, governmental regulations, financial, and economic conditions of the market and changing technology. For example, to protect everyone from potentially dangerous, infectious diseases, all people who live in the United States (US) are encouraged to be vaccinated. However, recently immunization rates in the United States have been falling (Phadke, Bednarczyk, Salmon, & Omer, 2016), and the Michigan vaccination rate for May 2018 is only at 60 % (“County Data | mcir.org,” 2018). Studies have shown that in areas where many parents do not vaccinate their kids, outbreaks, including sicknesses like whooping cough, are significantly more likely (Phadke et al., 2016). Those environments are affecting the SNHC population externally and are seen on a daily basis. Furthermore, lower rates of fully vaccinated children has recently led to several public health emergencies around the country including new cases of whooping cough and measles in communities with decreased herd immunity due to impaired vaccination rates. The internet has allowed several conspiracy theories and bad science to proliferate, one of which is the anti-vaccination movement. The World Health Organization cited vaccination hesitancy as one of the primary threats to world health. “The reasons why people

choose not to vaccinate are complex; a vaccines advisory group to WHO identified complacency, inconvenience in accessing vaccines, and lack of confidence are key reasons underlying hesitancy.” (WHO 2019). The anti-vaxx movement has proven dangerous on the West Coast and in the Somali community of Minneapolis. Those factors served as an input dimension to prompt initiation of this implementation.

Most of the population seeking help in this particular clinic consists of underserved and refugee and immigrant families from around the world (Hall, 2018). Many have big families with several children who have not received vaccinations. Moreover, the immunization program schedule by Centers for Disease Control and Prevention (CDC) often offer different vaccines, or different schedules than in other counties (Dicko, 2018). Even though immigrants and refugees receive vaccines before they come to the US; they likely need other catch-up vaccines. The children of refugees may require up to 45 doses of 13 vaccines as a requirement for daycare, preschool, and school attendance (Seither et al., 2017). The lack of vaccines for children program at this SNHC often means that children are redirected to other clinics; this is highly inconvenient. These factors can result in lack of follow through or an overall loss in clientele. Observing the external environment and reflecting on the significant factors for success will help SNHC managers evolve their organization to meet the demands of the vaccination needs in the Grand Rapids community. The organization is strategically positioned within a broader community where several organizations support and are supported by SNHC. This helps to limit the effects of unforeseen negative events from an external environment.

Another external factor concerns changes in government regulations. The model represents the primary considerations for organizational understanding and analysis (Burke, 2014).

Today, the SNHC provides quality care where and when it is needed; and it does this with particular attention to those who are most vulnerable (Hall, 2018). Because the clinic values diversity, employees and patients are accepted, regardless of spirituality or faith tradition. In addition to serve the underserved, the SNHC takes all patients regardless of their ability to pay. Many from the patient population are refugees and immigrants who cannot speak English. Almost at all levels of the health center have bilingual, bicultural staff to help patients in their native language (Hall, 2018). The SNHC uses a comprehensive team-based approach. Health care providers not only evaluate patients for their medical problem, they also look into the social-emotional health, which is provided by a licensed counselor and a spiritual care counselor. The SNHC fosters a workplace culture in which all employees can thrive. The staff members at the SNHC are hospitable, collaborative and spiritual. The SNHC delivers person-centered care, creates a healing environment, and advocates for the underprivileged, who normally lack access to healthcare.

Stakeholders

Key stakeholders include the administration, clinic staff and the greater community, particularly those who directly use the services of SNHC. The main “mission” stakeholders are the board of directors, committees, staff, volunteers, donors, patients, communities and partners (Hall 2018). The Doctor of Nurse Practice (DNP) project directly involves the patients, doctors, nurses, volunteers, board, interpreters and the XXXX County Health Department which will provide the vaccines. The DNP student conducting this project has communicated throughout with all stakeholders.

Strength, Weakness, Opportunity, Threat Analysis

The SWOT analysis of the implementation of the DNP project within the organization provided a comprehensive evaluation of the internal and external environment. The exploration of internal environment includes determining strengths and weaknesses in the organization. The strengths are same day appointments, and after hours care from an autonomous, dedicated staff with defined roles. The staff is technologically fluent and able to use e-prescribing. Furthermore, the clinic practices patient-centered care which takes the emotional and social needs of the patients into account.

The external environment included the opportunities and threats to the project including un and underinsured clients, reliance on volunteer providers, and frequently changing public health funding for immunizations. The opportunities include the approaching recognition by the National Committee on Quality Assurance (NCQA) as well as strong community partnerships with various groups including Michigan Care Improvement Registry to coordinate care. Another opportunity is the adoption of analytics to restructure workflows with standardized processes, with the potential of a more comprehensive database to allow for system integration. Finally, increased early intervention programs can be implemented through community leveraging agents.

The primary threat is the presence of anti-vaxxers who convincing parents are not to be vaccinated. This presence affects the population of SNHC due to the fact that many refugees have reasons to be suspicious of government intervention and an anti-vaxxer conspiracy theory could stoke those fears. For various reasons, the clinic's target population is likely not in compliance with the CDC recommended vaccination plans (NCRID, 2018). The population is uninsured and many of the clients are refugees who are currently particularly vulnerable for the kinds of the conspiracy theories that give credence to anti-vaccination propaganda. Other threats

include a current lack of community involvement, particularly in the lack of donations and volunteerism which reduces the amount of services that the clinic can provide. Donations are particularly important as many patients are uninsured.

Taking into account the positive and negative factors surrounding the implementation of the DNP project in the organization, there was sufficient evidence of the need for structural and process modifications in the quality improvement program. The need for change in addition to the results of the SWOT analysis was considered during the formulation of the implementation plan for the DNP project in the safety net clinic.

Clinical Practice Question

How does the addition of a VFC program impact immunization rates among children in an underserved and refugee population?

Is the clinic prepared for the VFC implementation in terms of resources and staffing? If not, what needs to be changed?

Review of the Literature

A review of existing research is essential to determine evidence based solutions to under-immunization in primary care. This quality improvement project concerns the implementation of the VFC program and the ability of the clinic to implement the program. Even though there has been little research into the VFC program as a whole, there are numerous studies demonstrating the role of immunization efficacy and rates. The DNP conducted a comprehensive electronic search using the following multi-database platforms – CINAHL, PubMed & EbHOST. The search was limited to English language peer reviewed studies conducted between 2013 and 2018. Key phrases included vaccines for children program, underserved populations & free clinics for the uninsured.

The DNP made use of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines as a framework (Moher, Liberati, Tetzlaff, Altman & PRISMA Group, 2009). PRISMA serves as a method to evaluate both quantitative and qualitative studies (see Appendix E).

These inclusion criteria included studies of patients, usually young children, from traditionally underserved populations, mostly within the framework of racial, ethnic or class disadvantage. Samples included first generation immigrants, Medicaid eligible patients, rural community patients, documented and undocumented aliens. Exclusion criteria involved adult vaccinations as an end goal and HPV vaccination. The latter exclusion was due to the age of the immunization. Furthermore, articles focusing on insurance coverage were excluded. The search initially yielded 226 articles. Each review was screened utilizing both inclusion and exclusion criteria in accordance with PRISMA criteria (Moher et al, 2009). See Appendix F for the flow chart of inclusion and exclusion. Six papers met the inclusion criteria – three comparison studies, two intervention studies and one survey. While random control trials are preferable, these clinical trials are rarely conducted with pediatric patients.

Studies focused on children and caregivers from underserved populations. Many of the subjects were uninsured but Medicaid-eligible and came from health administration surveys. Main subjects were children but in the interest of herd immunity, caregivers were also studied.

The research into vaccinations for children from underserved populations generally falls into three categories – comparison, intervention and survey studies. The studies were more likely to use analysis than double blind clinical trials. The comparison studies used data from several sources in order to make inferences and conclusions based on the research question, usually focused on particular geographic regions within certain frameworks. The studies found a racial/ethnic disparity accompanied economic disparity in vaccine reception.

Davila-Payan et al. (2014) determined that site specific vaccination programs such as school clinics have a positive impact on childhood vaccination; however, the positive association was lessened when underserved children were specifically studied. Both Stockwell et al. (2013) and Clayton et al (2014) found that private clinics are more likely to administer vaccines than public clinics. This fact has an adverse implication for vaccinating underserved children because they are usually use public clinics (Lifson, Thai & Hang, 2001). “Among 2,373,826 Michigan children aged 6 months through 17 years, 17% were vaccinated against influenza and lower vaccination rates were observed for public compared to private providers (13% vs 18%).” (Clayton et al., 2014, p. 46). This points to a class difference as well as a racial difference in the amount of vaccination coverage.

Furthermore, Stockwell et al (2013) found Latin parents have several reasons to feel wary of clinics and free vaccinations including immigration status, racial disparity and folk remedies. This finding was supported by Molina (2017) in a retrospective survey on Mexican attitudes toward Obamacare in which the subjects were suspicious of enrollment based upon a historical hostile immigration policy where documentation has been used for nefarious purposes. This leads to the question of how medical professionals can increase vaccination rates among these underserved populations.

Both intervention studies attempted to study the question of promoting vaccines among underserved children. Focusing mainly on the H1N1 flu vaccine, the researchers attempted to remove barriers to vaccination. Buttenheim et al. (2016) researched a voucher system where caregivers were offered vouchers to receive pertussis vaccines at the local pharmacy. By contrast Beel et al. (2014) studied the impact of asking caregivers if they wanted to receive flu vaccines on site.

Both studies yielded limited positive results. In the voucher intervention study, only one participant used the voucher, as instructed, at a retail pharmacy. The vouchers did not significantly improve the vaccine rates among caregivers, thus suggesting that economic barriers are not the only barriers to vaccination. This is especially worrisome as the “infant caregivers with high reported awareness of pertussis risk” (p.844) still needed a perceived personal risk that was missing. Many of the subjects cited time and work requirements. When these were mitigated by Beel et al. (2014) by the offering of vaccines on site, the vaccine rates increased. The researchers found that 73.3% were willing to receive influenza vaccinations whereas 50.5% were willing to receive pneumonia vaccines. Women were more likely to accept vaccination than men. This is not ideal, but it is an improvement. Beel (2014) concluded that “Developing sophisticated and robust educational materials for print and online use, although likely useful for certain target groups, would be unlikely to improve vaccination coverage” (p. 2543). Currently SNHC clients must seek vaccinations at the county health department as the clinic does not offer vaccination services.

Overall, the research indicates that there are unsatisfactory outcomes in regard to the goal of vaccination for enough children to ensure herd immunity. Parents from underserved populations tend to value the goal of vaccinating their children, but there appears to be a low level of vaccination follow through (Buttenheim et al., 2016). This represents a problem for both individual and herd immunity (Beel et al., 2014).

Another barrier to full vaccination for underserved populations is racism. Molina (2017) notes that “the discourse of the 1930s not only reinforced these pre-existing stereotypes of Mexicans as disease carriers but also increased their legitimacy by rooting them in scientific authority.” (p. 31). Predominantly Hispanic caregivers are reluctant to put their names on official documents. This dynamic an even more pronounced factor in today’s political climate.

Over-emphasis on HPV and H1N1 represents a major limitation on a review of current literature. An apparent scarcity of research concerning polio and MMR could be problematic as outbreaks of mumps and whooping cough have emerged, most notably in the Somali community of Minnesota where “State health workers identified nearly 9,000 people who were exposed to the measles infection.” (Pearson 2017). There is a need for both access and education, but access is much more effective and proactive vaccination programs like VFC can be effective for the administration of vaccines to children in disadvantaged and underserved populations.

Phenomenon Conceptual Model

The Donabedian conceptual model first proposed in 1988 by Dr. Avedis Donabedian is designed to evaluate the quality of healthcare from the dimensions of structure, process and outcomes (Institute for Healthcare Improvement (IHI), 2016). Structure is the physical environment including equipment, health care staff members and organization (see Appendix G). Process is the actual provision of health care including everything from educating the patients to making clinical decisions regarding support systems. Outcomes are measured by patient engagement in the health care plan or compliance; all three dimensions must be weighted equally to produce high quality services (IHI, 2016). The Donabedian model works within comprehensive health care structures such as the SNHC especially in regard to continuous quality improvement. It serves as a theoretical framework for guidance through implementation and evaluation of the VFC program.

Project Plan

Purpose of Project and Objectives

The purpose of the project was to implement a VFC program in an organization which served the underserved population of a Midwest, urban city. This implementation required feasibility and readiness in order to make certain that every objective was attainable. There were

several costs to implementing the VFC in terms of both money and human resource hours. The hypothesis of the project was that the VFC represented a significant benefit to the organization and the stakeholders including the population served.

Design for the Evidence-based Initiative

The Donabedian model served as the implementation framework for the design of this evidence-based initiative (IHI, 2016). The Donabedian model is comprised of three dimensions – structure, process and outcomes. Each dimension needs to be in place for the success of the implementation. Structure refers to the resources available in order to implement VFC. Process in this case is the readiness of the staff to carry out that implementation and outcomes would measure the engagement and impact of the implementation.

After obtaining approval from the University institutional review boards and SHNC the DNP student contact with Michigan Care Improvement Registry (MCIR) to performed record assessments and attained Michigan's statewide quarterly immunization report and specifically existing county immunization report from MDHHS the XXXX County, particularly the immunizations rates. Data was collected from existing data as of December 2018. The report included vaccination coverage of the past 8 quarters of children and adolescent who have received recommended vaccinations prior to starting school, with breakdowns in regard to the types of vaccination and compered with healthy people 2020 vaccination goal percentage (Healthy People, 2013). The DNP analyzed the data. The descriptive statistics data were received and analyzed. The results were presented to office managers and advisor for advice. The data helped to build strategies for improvement. In addition, a policy and procedure was designed that addressed the all-county requirements for VFC program. The DNP student presented the budget containing a checklist of the equipment for vaccines recommended by CDC to office leaders.

The study was limited by the given time frame. After baseline data assessment, five staff members two Physicians (PH), two Register Nurses and one Medical Assistant (MA) participated in VFC training. The training included Michigan Care Improvement Registry (MICR), highlighting objectives of historical immunization, accessing and entering historical immunization records, editing the VFC profile, submitting a VFC inventory report, ordering of vaccines, adding, modifying, and inactivating MICR registry and policies and procedures for same. In addition, the XXXX County Health Department Immunization Program coordinator provided 3-hour session to the selected team members in SHNC about the best practice for vaccine management: storage and handling, and VFC updates. Post training, the team was interviewed and surveyed to assess team effectiveness. The DNP student found that the staff was ready to implement the VFC program (see Appendix H). SNHC clients were also interviewed to ascertain the need for VFC. A variety of clients filled out a survey with five questions to assess their need for both a VFC program and a potential pediatric care location.

Setting

The project was conducted at the SNHC and involves working with the stated data at the safety net clinic which serves uninsured and underinsured population of the area. Most of the clients lived nearby but many drove as far as 30 miles to visit the clinic. The organizational personnel involved in the VFC implementation program included the medical director, the clinical nurse manager, staff nurses, medical assistants and volunteer health care providers. The DNP student utilized public records after, EMR (Athena Health) for data recording and reporting as well as Microsoft Office Excel for data analysis after utilizing survey of the patients who are interested in receiving pediatric care. The necessary time for the VFC implementation was categorized in volunteer and staff time. The volunteer time included volunteer education, evaluation of education materials, expanded nursing intake process and increased documentation.

The staff time included education, evaluation of education materials, expanded nursing intake process and increased documentation, running monthly reports from the EHR system, exporting monthly data to Microsoft Excel clinical dashboard analysis and displaying monthly compliance rates. The setting and requisite resources shaped the implementation based on evidence-based improvement program components.

The staff understood VFC protocols before they were implemented. The development of protocols and training of the staff was a major part of the project. Also purchasing VFC programmatic equipment has been essential. The equipment was not perfect and there was an issue with the refrigeration that will need to be dealt with before full implementation. The project had been authorized by the staff manager (see Appendix I), and additionally determined not to be research by Grand Valley State Universities' Internal Review Board (see Appendix J).

Participants

Even though the ultimate goal of the DNP project was to increase vaccination rates for the underserved population by implementing the VFC program, additional measures of competence was determined for the staff in order to test their effectiveness to implement the program. The target population included the office staff that will be actively participating in the program. The SNHC served a diverse population in the Grand Rapids area and the primary beneficiaries of this program will be the children of the underserved population. An estimated 50 individuals under the age of 19 were served for a total of 83 visits in the past fiscal year. The SNHC expanded its pediatric practice effective November 2018 but pediatric populations were very limited at this moment.

Model Guiding Implementation

As noted above, this quality improvement project was based on the Donabedian conceptual model which guided the inquiry in terms of examining the organizational culture in

terms of leadership, staffing and the ability of the organization to implement VFC with maximum efficiency (IHI, 2016). This model informs the implementation in assessing the structure, process and outcomes.

The Structure Dimension

The structure dimension included an assessment of the physical environment including equipment and health care staff. The structure study included an organizational assessment to identify the contextual organizational factors that affect project design and implementation (IHI, 2016). The proposal of the formal implementation of the quality improvement program included assessment of baseline immunization rates, assessment of staff preparedness and physical resources and visit other clinics to observe their VFC related material throughout the urban area. This supported education of the staff on the details of the VFC program and implementation.

The Process Dimension

The process dimension addressed all the aspects of the patient providers' interaction during care especially with the service provided (IHI, 2016). The quality improvement program involved interviews with the staff to assess their preparedness to implement the VFC program. The process aspects of high-quality care include accuracy of diagnosis and provision of evidence-based treatment (IHI, 2016). Furthermore, the systemic delivery of care included adherence to current scientific knowledge adhering to the project also keeping respectful behavior toward patients. The process dimension of the project will include assessing EMR for properly managing ordering and billing for the services. Because the EMR system was able to integrate vaccination orders and billing the implementation involves making certain that details such as vaccination lot numbers can be tracked. A system was developed for this. The VFC program is an integral portion of wellness and treatment plans for children and youth. The DNP student provided a toolkit of policies and procedures such as Vaccine Management Plan to

facilitate staff implementation. Furthermore, integration of mandated VFC education materials helps increase awareness of vaccination needs for this population. The quality improvement project developed policies and procedures to facilitate pediatric clients to be assessed for vaccination completion via the Michigan Care Improvement Registry (MICR) system, and administered any needed vaccinations per policy and procedure. Once the data collection including vaccination rates and costs is complete the process will be assessed and implemented.

The Outcome Dimension

Outcomes are measured by several guidelines including patient engagement in the health care plan and compliance with CDC vaccination series completion recommendations. The Outcome dimension involved an analysis of healthcare personnel readiness for the VFC implementation and focuses on designed outcomes of the VFC program as determined by vaccination compliance rates. The DNP student planned to assess pre-intervention and post-intervention data comparison of vaccination series completion rates (percentages) in XXXX County from the MDHHS for DTap, HIB, Hepatitis A, Hepatitis B, HPV, MMR, Meningococcal, polio, and Varicella, compared to average vaccination rates for these vaccinations for pediatric clients at SNHC one month after full implementation. The short-term outcomes will be increased skill and knowledge about vaccination among providers and other staff and long-term outcome measure will be fewer vaccine administration errors, and high cover rates. The clinic specific data is not publicly available and will be obtained from the reports function of the EMR.

Implementation Steps and Strategies

This DNP project intended to initiate the implementation of the VFC program, the staff of the SNHC will be in charge of implementing the VFC program. A significant part of the project involved preparation of the staff and facilities to implement the VFC. The

implementation was measured by the readiness of the staff to implement the project and eventually, by the immunization rates resulting.

The implementation will be based on Kotter's 8 Step Change Model (see Appendix K), as follows –

1. Create a Sense of Urgency – the primary portion of the project was the vaccination rates and the need for the VFC program to increase vaccination rates in the underserved population. The SNHC was eager to implement the VFC project. After several board meetings, the team at the clinic had a strong feeling that there was a need for an immunization program and it needed to be implemented quickly. The staff recognized that the VFC program would bring new revenue to the clinic. They were expressing commitment to whatever changes are necessary to make sure of a successful implementation of the program. The notion of the coalition of Kotter's 8 Step Change Model is change coming from within the organization (Kotter, 2012) rather than externally from the student.
2. Create a Coalition – This was addressed by the ability of the staff to implement the VFC program and to document and bill appropriately. This was addressed by collaboration with the staff (Kotter, 2012) selection of an employee who helped with the project to see the change through and sustain it. The Medical Director, Staff Physician, Project and Quality Manager, Staff Nurses (RN) and Medical Assistants (MA) formed a guiding coalition to provide necessary input and direction for developing and implementing the new VFC program.
3. Create a Vision –The practice has recognized the need and supported the project with staff time, space, processes, and equipment (Kotter, 2012). The DNP student needed to provide a clear understanding to the coalition what this change will entail. The DNP

student created a vision to connect new immunization service to the mission and long-term sustainability of the clinic and communicated the vision with the entire staff.

4. Communicate the Vision – The DNP student shared the connection between new VFC program and the new pediatric services, but also communicated the need for sustainability. Providers received updates about the readiness of staff and equipment and of availability of vaccinations and screening and ordering procedures for their clients. For the convenience of the staff, vaccine orders were already in the electronic medical record. Information regarding the VFC program was communicated to patients via multi-lingual posters in waiting areas and examination rooms.
5. Empower Action- For the VFC program to be successfully developed and implemented, the DNP student needed to spend time classifying and eliminating possible limitations to the full potential of the program. To empower broad-based action in the staff and guiding coalition, the DNP student made sure all people involved in this project have evidence-based resources to accomplish their respected aspects in the change process. The DNP student facilitated the VFC training, Vaccines Storage and Handling training, and MICR training for the staff which was state mandated. Training for staff, all VFC materials, and poster and chart reminders were provided to remind MAs and RNs to screen, communicate with providers, and supply patients with materials for immunizations to occur in real time at visits. Throughout the process, the DNP student addressed any barrier brought to the DNP student's attention by the coalition immediately to keep change process moving.
6. Create Quick Wins- Performance, expectations, and incentives were provided (Kotter, 2012) to the team once full implementation occurs. New service weekly reports of vaccination numbers where be posted in the primary provider area to build awareness and

momentum. The DNP student needed to check with the coalition periodically to keep the team motivated to continue work towards project goals. Such efforts needed to be recognized publicly in weekly staff meetings as part of generating short-term wins (Kotter, 2012).

7. Building on the change to consolidate gains to produce more change, the DNP student focused on the role of the early success as an enabler of the future success.

Introducing the data before and after implantation of the project (Kotter, 2012) to the team on a dashboard helped built a desire to work on project goals. Periodically education concerning VFC throughout SNHC that reminds everyone that they are now using the VFC program. This step helped to build future milestones and reinforce the vision (Kotter, 2012).

8. Make it Stick-as the VFC program was implemented, the SNHC needs to anchor changes within the clinic culture. The DNP student and created coalition needed to monitor the acceptance of the new service and how well SNHC culture was adapting to this additional service. This can be accomplished simply by evaluation of the VFC program on a monthly basis to ascertain its position as a major part of the clinical practice. Such action will better prepare team if any changes need to be done in the future (Kotter, 2012). The project measured the ability of the organization to implement the program in this manner.

Evaluation & Measures

Prior to implementation, the DNP student collected data concerning area vaccination rates from MDHHS. Measuring the success of the project was a challenge due to lack of clear zip code specific data. For the Quality Improvement project, the DNP student used descriptive study consisted of four parts. The first phase was a retrospective vaccination card review specifically for the region, second phase a provider survey, third phase was pre and post training data, and

finally a patient survey. When the VFC is fully implemented, EMR reports will provide before and after implementation vaccination series completion rates.

All information is obtained with permission from the sources that require authorization. The DNP student used public information and the statistical results were presented in the result section of this paper.

Phase One

Objective. Public health databases measure the vaccination rates of the SNHC county service area. Area vaccination series completion rates were compared to HP 2020 pediatric vaccination series completion goals. A retrospective county quarterly immunization report card was utilized to determine the rate of the immunized children from age 0 to 19 in the specific county. Measures of series completion rates from specific type of vaccines provided by VFC program for 2018 physical year. County data was compared with the statewide quarterly data results and ranked appropriately. The results were reported in percentage and was compared with HP 2020 goals.

Phase Two

Objective. The DNP student also collected data concerning the preparedness of the staff to implement that program in the same time period both before and after training was completed. To evaluate training objectives, pre-posttest comparison knowledge questionnaires were developed. A provider survey was conducted during the VFC training. The pre-test and post-test were built by using evidence-based practice questions containing 15 multiple-choice questions applied specifically to recommendations current VFC guidelines (see Appendix L). The test helped to determine the clinic staff current knowledge. Individualized pre and post test scores was aggregated, comparing one average of total team score. Because of the same data and same

questions without identifying anybody T test was statistically run. 0.5 confident interval score used report p value.

Phase Three

Objective. The staff readiness was assessed using a Team Effectiveness Diagnostic tool created by London Leadership Academy, National Health Service. The VFC coalition team including two PH, two RN, and one MA was provided 56 questions. This questionnaire examined team effectiveness by using eight dimensions: Purpose and goals, Roles, Team processes, Team relationships, Intergroup relations, Problem solving, Passion and commitment, Skills and learning. The questionnaire used Likert scale-based numeric value of 1-5 for each of the 56 statements. The results were reviewed by the statistician and discussed in result section of this paper.

Phase Four

Objective. Finally, the DNP student collaborated with the primary care leaders at the SNHC to conduct a patient survey to identify patients' interest in pediatric and VFC service at clinic. The survey (approved by clinic staff) was provided in English and Spanish with five questions (see Appendix M). Over the three-week period 28 patients who came to clinical visit were surveyed. The de-identified data was transferred to a spreadsheet. Furthermore, survey respondents children' ages were divided into seven different groups. Majority patient population is Latino, ethnicity groups were created in spread sheet.

Future Plans

Objective. Due to equipment difficulties, the QI project was not fully implemented as planned. Taking these circumstances into consideration, the DNP student provided the appropriate tools for measuring vaccination series completion to the SNHC. Resources were evaluated and compared to the resources necessary to implement the VFC programs. The clinic

will collect pre and post vaccination series completion data via MCIR data which is embedded in the EMR. Pre and post implementation vaccination series completion rates will be compared using Chi-square calculations. Vaccination series completion rates can be compared prior to implementation and at six months post implementation, once implementation is commenced. Guidance was provided to the staff to assess effectiveness of the project after implementation occurs as noted.

Additionally, the DNP student developed and facilitated a comprehensive immunization training plan that ensured that all healthcare providers received required MDHHS training in a timely and professional manner. This involved coordination of scheduling, registration for all training sessions overseeing development, training curricula, and an evaluation of the effectiveness of training. The DNP student evaluated the staff's understanding of benefits and safety of vaccinations. The type of training materials varied by role, and included question and answer booklets, flip charts, PowerPoint presentations and links to reliable evidence-based websites. All the data was provided to medical director, the clinical nurse manager, staff nurses, medical assistants and volunteer health care providers to facilitate ongoing training of new staff. A toolkit for implementation policies and procedures, including management of power failure along with information on cold chain maintenance for vaccine efficacy was provided.

Data Collection and Management Procedures

The DNP student collected the following data: baseline immunization rates in the SNHC service area and readiness and knowledge of staff to implement the VFC program (qualitative and quantitative) through the following instruments - scenarios, surveys and semi-structured interviews. The data was collected from the end of 2018 through February 2019 in person and through electronic sources found on public databases.

Data Management

The DNP student, who is acting in the capacity of the project director, is responsible for all data management. Baseline vaccination data was gathered from electronic sources and entered into an electronic database. All non-public data was kept private and stored on secure servers. Human survey participants were anonymous. The clinic followed all safety requirements including safe and effective storage simulation of vaccines. The county required daily temperature logs being maintained. Concerning staff preparedness, the DNP student used paper and online surveys to generate data. The DNP student trained with the Quality Manager at the SNHC regarding EMR use to obtain pre and post vaccination completion rates for the practice, once the project is fully implemented.

Analysis

Data was analyzed quantitatively using regression analysis with a margin of error at 95% confidence level. Qualitative data was assessed in the form of interviews and surveys. The five staff members and the two clients who answered the surveys were very enthusiastic about the need and the readiness for VFC implementation. The local vaccination data was not readily available; however, the municipal data shows a lower than ideal vaccination rate and there is no reason to think that the SNHC client base does not have similar vaccination rates. In fact, given the fact that many SNHC clients were refugees and undocumented immigrants, there was a very real possibility that the vaccination rate was lower than the municipal rate.

The initial plan was for analyzing data placed the data into two separate categories – vaccination rates and staff preparedness. Data were collected in multiple phases of the summary retrospective chart and inferential statistical tests, pretest/posttest, and patient survey questioner descriptive statistics. The data was collected in a meaningful way and easy to navigate and read. This method helped simplify the interpretation of the data and assessment of the ability of the

organization to implement the VFC program in a timely and efficient manner included staff preparedness. The outcome evaluation data analysis attempted to work through four hypotheses which presented in the result section. All the data was collected in timely manner by the DNP student and presented specifically build satisfaction team at the Grand Valley State University. The DNP student advised the statistician to construct the data using graphs, tablets, and pie charts. After interpreting the data, it was straightforward to address the areas where the DNP student need to require the most critical part of the QI material to be present in the coalition. The data along with analysis was presented to the project director's adviser with data sets from the four categories

Resources & Budget

A major portion of the initial part of the project was the cost of implementing the VFC program. Various costs were taken into account in the economic part of the project assessment. In order for the SNHC implementation of a VFC program several CDC approved items for vaccine transport from the County Health Department (KCHD) and storage were needed. Workflow, access, and comfort also need to be considered in the department design. The SNHC selected the specific equipment, refrigerator, freezer, and portable thermometers which best fits the program (see Appendix N). Furthermore, staff training on VFC program (1 hour 15 minutes), and Storage and Handling (1 hour) were provided by KCHD for no charge. Michigan Care Improvement Registry (MCIR) requires face-to-face Vaccine Inventory training with SNHC staff who will be working directly with vaccines. Training was provided to one medical assistant (MA), two register nurses (RN). For the 2018 average hourly wage for the MA is \$17, and RN is \$29, (Salary.com, 2018a; Salary.com, 2018b; Salary.com, 2018c). According to Pay Scale the training for approximately five hours will cost 375 dollars for the staff who will be involved in the project. The main expense of the DNP student includes time spent researching equipment for

VFC program, organizing meetings and trainings, collecting the data before and after the project. The DNP student spent approximately 200 hours to implement this VFC program. The average salary of the RN is 29 dollars (Salary.com, 2018b) and this time was donated by DNP student (see Appendix N). A Presidential Grant was submitted by the DNP student to cover some expenses of the project. The VFC program implementation is expensive especially considering all the needed equipment. Over time, it will be cost effective and has positive outcome for preventing individual and community disease rates.

Timeline

Timeline of the project presented in Appendix O. The assessment determined the implementation schedule. However, the freezer modulation presented barriers to full implementation that need to be addressed at a later date. After communicating project data, the DNP present the results to the coalition of the VFC program at the site and also provided reliable toolkits for the continue the program. On April 8, 2019, the DNP student gave the final oral presentation to describe and defend of the entire course of the QI project.

Results

This study began as part of the completion of a Doctorate in Nursing Practice Degree. In working with the population of SNHC, the DNP student determined that a great need existed among children in the community to receive optimum health care. Many of the patients were underserved due to issues of class and culture. Since the patients were mostly adults, the clinic had not yet instituted the VFC program. However, this clinic serves a larger urban community and beyond that would require vaccinations for the wellbeing of the children and adults.

Methods

The researcher assessed resources, preparedness of staff and need for the vaccinations including budgets and the costs of implementing the VFC program. This involved the data

questions of whether or not the cost was prohibitive given the current operating budget.

The determination of preparedness of staff and interest of the patients was conducted using surveys. These were adapted from the Team Effectiveness Diagnostic created by London Leadership Academy and modified by the National Health Service. These questionnaires were quantitative and qualitative.

Finally, patients were surveyed regarding interest in the possibility of both a VFC program and a pediatric clinic operating out of this location. Patients were asked a series of questions concerning their children's ages, immunization schedules, interest in a pediatric care facility in SNHC as well as the willingness of the patients to schedule appointments for their children. Even though the sample size was small, results indicated enthusiastic support for both a VFC program and a pediatric care unit.

Intervention

The intervention is the implementation of the VFC program into the clinic. The primary strategy for this implementation is transformational. Transformational leadership believes that every individual member of the team has something to contribute and can take ownership of their work. "The literature is replete with studies documenting the positive effects of transformational leadership on numerous outcomes such as follower motivation, satisfaction, and performance, as well as—with respect to these criteria—the superiority of transformational leadership over transactional or laissez-faire leadership styles in most situations" (Kearney & Gebert 2009).

Approach

This study assessed the readiness of implementing a VFC program in the SNHC. The primary focus was on whether the VFC program can be implemented in a cost-effective manner that benefits the underserved population. The assessment was based on a Donabedian model which comprises three dimensions – structure, process and outcomes. The assessment

design focused primarily on the structure and process. Outcomes will be assessed at a later date by further studies. The structure part of the analysis covered the costs and the patients' interest in a VFC program. The process part covered an assessment of the preparedness of the staff to implement the program.

Measures

Data was collected through public and SNHC databases. DNP student evaluated the information upon several metrics. Vaccination rates were assessed to ascertain the need for a VFC program within the clinic serving the target population. Staff preparedness was assessed on scales of 1-10 based on interviews, surveys and feedback. Furthermore, the DNP student interviewed patients and evaluated their willingness to participate in the VFC program. These surveys were measured quantitatively.

Results

With the assessment of resources, the DNP student found that there are ample resources for the implementation of the VFC program. The SNHC is a clinic that operates within its budget. Since the SNHC receives donations, in addition, the DNP student applied for Presidential Research Grant. Even without the grant, the SNHC is more than equipped to offer a VFC program. Furthermore, VFC is at least partially funded by the federal government and the initial implementation will receive partial support from the county health department. Once VFC is fully implemented, the operating costs of the program will be funded by the clinic. Staff will continue to receive training and vaccines from KCHD.

Vaccination Rate Review. The final sample was collected from the MCIR survey from January 2017 to December 2018. The sample size of 205,069 for the county and 933,304 for the state children was analyzed. Data was collected from two age cohorts (aged 19 to 36 months and 13 to 17 years). Table and image in Appendix P for a table provides more information. The

SNHC community has completion rates for DTaP, polio, MMR, Hib, Hepatitis B, Varicella, PCV, and Hepatitis A for 19 to 36-month old's of 58-65%. The numbers (illustrated in table and map) clearly reveal that the county's coverage falls well behind the 85% goal of HP2020. In teens aged 13 to 17, DTaP, polio, MMR, Hepatitis B, Varicella, Men ACWY, and HPV completion rates were approximately 46 to 76%.

Provider survey. The staff is willing and prepared to implement the program. They expressed their preparedness in survey forms and training evaluation. The preparedness questionnaire asked a series of questions based on what the staff perceived as strengths and weaknesses regarding team effectiveness. According to the assessment result, the clinic scored above 86% with (SD=0.2962349) on each team effectiveness dimension. From these results, the DNP can discern the highest scores were on intergroup relations, roles, problem-solving, passion and commitment, skills and learning, with (SD=0.127). The lowest skill set was team relationships with 86.15% (SD=0.447) (see Appendix Q). This outcome is very positive for the purposes of the VFC program, which has been implemented in several clinics and therefore does not have the same need for problem-solving that an entirely new program would demand.

Beyond emotional preparedness, testing determined the staff's preparedness in several areas including the knowledge base and time management. The average score was above 87% with 95% confidence level. These results showcase the readiness of each member of the clinic to handle change management. Furthermore, the clinic personnel have strong teamwork experience that will allow them to share confidence and effectiveness.

Description of Participants in Staff Training. In the 2018 group there were four female and one male protocol participants. The group consisted of two physicians, two RNs and one MA. Knowledge question scores with 15 being the highest score ranged from 10 to 14 (M=12.20, SD=1.48). In the 2019 group, there were again four female and one male which included

two physicians, two RNs and one MA. The knowledge questions scores ranged from 13 to 15 ($M=14$, $SD=0.71$) (see Appendix R). Statistically significant results demonstrated that training had a positive influence on learning. From all 15 questions Q7 and Q15 were the most challenging in both groups. Pre-training group had only one correct and four incorrect response after training there were only two correct and still three incorrect responses. With Q15 there were four incorrect responses out of 5 in the first group and three correct and two incorrect responses in the post training group. The positive outcome suggests that training was helpful. The staff gained important knowledge.

Description of Participants in Patient Survey. Patient surveys were completed during the pre-implementation period. There were 28 total participants and 2 participants (7.14%) were primarily Caucasian with the remaining 26 (86%) participants of Hispanic origin. The number of children in the household ranged from 0 to 8. Age ranged from 0 to 18 with the Mean age of 9.35. Within the data, the DNP student reported 54 children under the age of 18.

According to patient survey result 41 participants (75.93%) responded stating their children were up to date with immunizations (see Appendix S). Of the remaining responses, 7 participants (12.96%) said their children were not up to date and 6 respondents (11.11%) are not certain if they are up to date. For the following questions, 8 (14.81 %) stated that they wanted to receive pediatric care at the clinic. Of the remaining survey respondents, 13 (24%) responded as “no,” and the remaining 33 people (61.11%) stated that they may come interested in the future.

The next question asked whether the participants were interested in making an appointment the same day. Of the answers, 2 (3.70%) participants were interested in making an appointment at the same day, and 8 (14.81%) were not interested. The remaining 44 (81.48%) participants did not want to schedule the same day but appeared interested in making an appointment at a future date. Survey summary concluded that most of the patients were not interested in making a commitment

on the day of their visit and wanted to decide in the future if they want their children take advantage of a pediatric section at the clinic.

The most important aspect of this study was the fact that at least 24.07% participants think that their children are not up to date. Further the self-reporting of 75.93 % of participants stating that children are up to date it data that cannot be verified.

Discussion

The VFC program is a program that will increase vaccination rates and ensure herd immunity in a vulnerable population. It is an essential federal program that has been shown to have great results in several areas. Since Michigan is 29th in vaccination rates and Grand Rapids has a highly underserved population that would not necessarily be served otherwise.

The study determined the intervention of implementing a VFC program to be cost-effective due to the government funding as well as the budget within SNHC. The program will be implemented as part of an initiative by SNHC to create a pediatric ward and serve the underserved population in a much more comprehensive fashion. Many of the patients coming into the clinic had requested a pediatric center for their children and this fact points to a successful outcome for the VFC implementation.

Limitations

The study of this VFC implementation was specifically focused on one clinic in an urban area that served an underserved population that is largely based on immigrant and refugee populations. The project is for the clinic alone and does not seek to expand to other clinics. However, the implementation of VFC in this clinic represented a repetition of results from other clinics where the VFC program has been partially implemented due to equipment failures as not planned. Additionally, equipment difficulties prevented full implementation and evaluation of

the implementation by the DNP student. Staff were given clear tools to facilitate implementation, once equipment problems are remedied.

Implications for Practice and Further Study in the Field

Conclusion

The ability of the SNHC to implement the VFC program in a major improvement project was a necessary study. The VFC program is an essential component in the health of the community and the individual families. This study assessed three dynamics of the project - the economics of implementing the VFC program, the need for the VFC program and the readiness of the staff to implement the program.

Implications for Practice

This study showed that the VFC program can be successfully implemented in a SNHC. This will improve the vaccination rates of clients served. Further assessment will be required to ascertain the success of the VFC program when the program is fully in place. This will serve as a contribution to the body of material for the dissemination of evidence-based practice. Vaccination is a major issue within the general population.

Sustainability Plan

The DNP student found that financially the VFC program should be self-sustaining. Profit margin will increase as capital expenditures are covered. Continued necessary staff trainings for the VFC program may be covered by State of Michigan Department of Health. Furthermore all vaccines can be provided by VFC program for no cost to SNHC. Medicaid recommends that clinics use Federal Poverty Guidelines to charge for clinical services (see Appendix T). This will help to sustain the project because it will cover the cost of the project in long run by permissible charges from Medicaid and other insurances. After project

implementation, the Quality Manager has agreed to take responsibility to run VFC program at the SNHC.

Dissemination of Result

The project will be disseminated through several venues including project defense, Scholar Works publication, possible journal publication and poster presentations. These findings will allow future VFC implementation programs in under-resourced clinical practices. EMR integration enables bill for services to support sustainability as well as ongoing training.

Reflection on DNP Essentials

The American Association of Colleges of Nursing (AACN) promotes evidence-based nursing knowledge for current use in practice in the Doctor of Nursing Practice Essentials. This project is part of the fulfillment of the eight foundational competencies through the following ways.

Essential I: Scientific Underpinnings for Practice

Through the VFC implementation project, the DNP student applied knowledge of biophysical, psychosocial ethics as well as analytical and organizational sciences. This project utilized the latest scientific theories that began with germ theory and continues with findings in vaccination rates. The implementation of VFC is based Koetters Theory which has three major concepts of driving forces, restraining forces and equilibrium. Furthermore, it falls upon the theoretical Donabedian model as well as several leadership theories including transformational leadership.

Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking

The DNP program prepared the graduate to develop and evaluate care delivery approaches to meet the needs of current and future needs of patient populations. This does not mean simply treating the patients but also creating and fostering a functional delivery of care system that ensures accountability. Within this project, a budget was developed for the clinic, and several grants were applied for in order to secure funding.

The VFC program implementation was based upon the ability to analyze cost-efficiencies and advanced communication processes in order to improve health care outcomes for the wider urban area. The SNHC served a diverse population of patients who may otherwise not receive health care and the VFC is an effective strategy to promote health in this vulnerable population.

Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice

In order to implement the VFC program, multiple different peer-reviewed articles were analyzed in order to design and implement the best available process. Within the breadth and scope of the academic literature, a great deal of work was found that cites convenience and price as the two main barriers to vaccination within the target population.

Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care

In this part of the project, appropriate technology to be used for the VFC program including vaccination safety was found. The EMR was evaluated for input of confidential patient vaccination information and integration with a state database of same. Furthermore, appropriate software and hardware were used for data gathering and analysis. Our world has moved into a technological society where tools that were once considered novelties are now essential for our occupations. In the medical field, medical records and e-communication allow for a great deal of

freedom that comes with knowledge of the patients and their needs. This study involved gathering data and extracting data and in order to evaluate all of the legal and ethical issues; the technology needed to be in place at every level.

Essential V: Health Care Policy for Advocacy in Health Care

This project required the creation of policy and procedures for VFC administration before the program could be fully implemented. This was in compliance with all local, state, federal and international guidelines.

Essential VI: Interprofessional Collaboration for Improving Patient and Population Health

Interprofessional collaboration was built between several key stakeholders including the clinic administration, staff and county health personal. Roles and function were evaluated to create the best and most efficient VFC program implementation. Consultative skills were employed in order to allow the program to be adopted.

Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health

The VFC program was a corrective to the current crisis in vaccination rates that has been promulgated by anti-vaccination extremists and social media. The SNHC population served consists of families that either do not have access to scheduled vaccinations or live within communities where there is a suspicion of government agencies that can make them vulnerable to anti-vaccination conspiracy theories. With the implementation of VFC the SNHC is better able to serve this population and deliver the scheduled vaccinations. By assessing the readiness of the VFC implementation, this study has helped to form the basis for an implementation that will increase vaccination rates as well as herd immunity.

Essential VIII: Advanced Nursing Practice

The VFC program implementation offered an excellent opportunity to design and evaluate therapeutic interventions through relationships with the patients and the medical staff incorporating culturally sensitive approaches. Analytical skills were used to educate and guide individuals through the implementation based on nursing and other sciences. Implementation of this comprehensive vaccination intervention was achieved through use of analytic skills in evaluating population needs, organizational and financial capacity and adherence to policy issues.

References

- Across-America. (2018). Retrieved October 24, 2018, from <https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Pages/Across-America.aspx>
- Andre, F.E., Booy, R., Block, H. L., Clemens, J., Datta, S.K., John, T. J., ...Schmidt, H. J. (Feb 2008). Vaccinations greatly reduces disease, disability, death and inequity worldwide. *World Health Organization*. 86(2). <http://www.who.int/bulletin/volumes/86/2/07-040089/en/>
- Austin, K. (2017, January 5). Health services organization changes name, opens second clinic [MLive.com. Retrieved July 21, 2018, from https://www.mlive.com/kentwood/index.ssf/2017/01/health_services_christian_orga.html
- Beel, E.R., Rench, M.A., Montesinos. D. P., Healy, C.M. (2014). Acceptability of immunization in adult contacts of infants: Possibility of expanding platforms to increase adult vaccine uptake. *Vaccine*. 32(22): 2540-2545. <http://dx.doi.org/10.1016/j.vaccine.2014.03.056>
- Burke, W. W. (2017). *Organization Change: Theory and Practice*. SAGE publications.
- Burke, W. W., & Litwin, G. H. (1992). A causal model of organizational performance and change. *Journal of Management*, 18(3), 523-545. doi: 10.1177/014920639201800306
- Buttenheim, A. M., Fiks, A. G., Burson, R. C., Wang, E., Coffin, S. E., Metlay, J. P., & Feemster, K. A. (2016). A behavioral economics intervention to increase pertussis vaccination among infant caregivers: A randomized feasibility trial. *Vaccine*. 34: 839-845. <http://dx.doi.org/10.1016/j.vaccine.2015.11.068>
- Clayton, J. L., Potter, R. C., Wells, E. V., Carlton, C. A., & Boulton, M. L. (2014). Influenza vaccination of Michigan children by provider type, 2010-2011. *American Journal of Preventative Medicine*. 47(1):46-52. <http://dx.doi.org/10.1016/j.amepre.2014.03.002>

- Davila-Payan, C., Swann, J., & Wortley, P. M. (Jan 2014). System factors to explain 2009 pandemic H1N1 state vaccination rates for children and high-risk adults in US emergency response to pandemic. *Vaccine*. 32(2): 246-251.
<https://doi.org/10.1016/j.vaccine.2013.11.018>
- Ezeonwu, M. C. (2018). Specialty-care access for community health clinic patients: Processes and barriers. *Journal of Multidisciplinary Healthcare* 11: 109-119.
10.2147/JMDH.S152594
- Hall, L. E. (2018). *Implementation of evidence-based culturally adapted interventions, collaborative care, and change management for improved mental health outcomes in a community-based safety-net clinic, 131*. Grand Valley State University, Grand Rapids, MI.
- Healthy People (2013). Healthy People 2020 Washington, D.C.: U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Retrieved from: <https://www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases/objectives>
- Kotter, J. P. (2012). *Leading change*: Boston, Mass. With a New Preface by the Author. Harvard Business Review Press
- Lifsan, A. R., Thai, D., & Hang, K. (2001). Lack of immunization documentation in Minnesota refugees: Challenges for refugee preventive health care. *Journal of Immigrant Health*, 3(1), 47-52.
- Lobo, J. (2016). Vindicating the vaccine: Injecting strength into mandatory school vaccination requirements to safeguard public health. *Boston College Law Review*. 57(1): 261-296.

- MDHHS (2018). County immunization report card. *Michigan Department of Health and Human Services*. https://www.michigan.gov/mdhhs/0,5885,7-339-73971_4911_4914_68361-321114--,00.html
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009, July). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Med.* 6(7).
10.1371/journal.pmed.1000097
- Molina, N. (2017). Why didn't more ethnic mexicans sign up for obamacare? Examining public health's impact over one hundred fifty years. *American Journal of Medical Research* 4(2): 20-46.
- NCRID (2018). Vaccines for children program. *Center for Disease Control and Prevention*. Retrieved from <https://www.cdc.gov/vaccines/programs/vfc/index.html> on July 17, 2018
- Pearson, C. (2017, June 29). Minnesota hoping for an all-clear after measles outbreak in somali-american community. *Voice of America*. <https://www.voanews.com/a/minnesota-measles-outbreak-somali-community/3921139.html>
- Salary.com. (2018a). Physician – family practice. Retrieved from <https://swz.salary.com/SalaryWizard/family-physician-Salary-Details-GRAND-RAPIDS-MI.aspx>
- Salary.com. (2018b). Social worker (MSW). Retrieved from <https://swz.salary.com/SalaryWizard/Social-Worker-MSW-Salary-Details.aspx>
- Salary.com. (2018c). Staff nurse – RN – medical management. Retrieved from <https://swz.salary.com/SalaryWizard/Staff-Nurse-RN-II-Medical-Management-Salary>
- Salary.com. (2018e). Statistician. Retrieved from

<https://swz.salary.com/SalaryWizard/Statistician-I-Salary-Details-GRAND-RAPIDSMI.aspx&fromevent=swz.selectjob.freepop>

Stockwell, M. S., Martinez, R. A., Hofstetter, A., Nataparan, K., & Vawdrey, D. K. (2013).

Timelines of 2009 H1N1 vaccine coverage in a low-income pediatric and adolescent population. *Vaccine*, 31(16): 2103-2107. <https://doi.org/10.1016/j.vaccine.2011.03.062>

Varan, A. K., Rodriguez-Lainz, A., Hill, H., Elam-Evans, L. D., Yankey, D. & Li, Q. (2016).

Vaccination coverage disparities between foreign-born and U.S.-born children aged 19-35 months, United States 2010-2012. *Journal of Immigration and Minority Health*, 19(4), 7779-789. Retrieved from <https://link.springer.com/article/10.1007/s10903-016-0465-4>

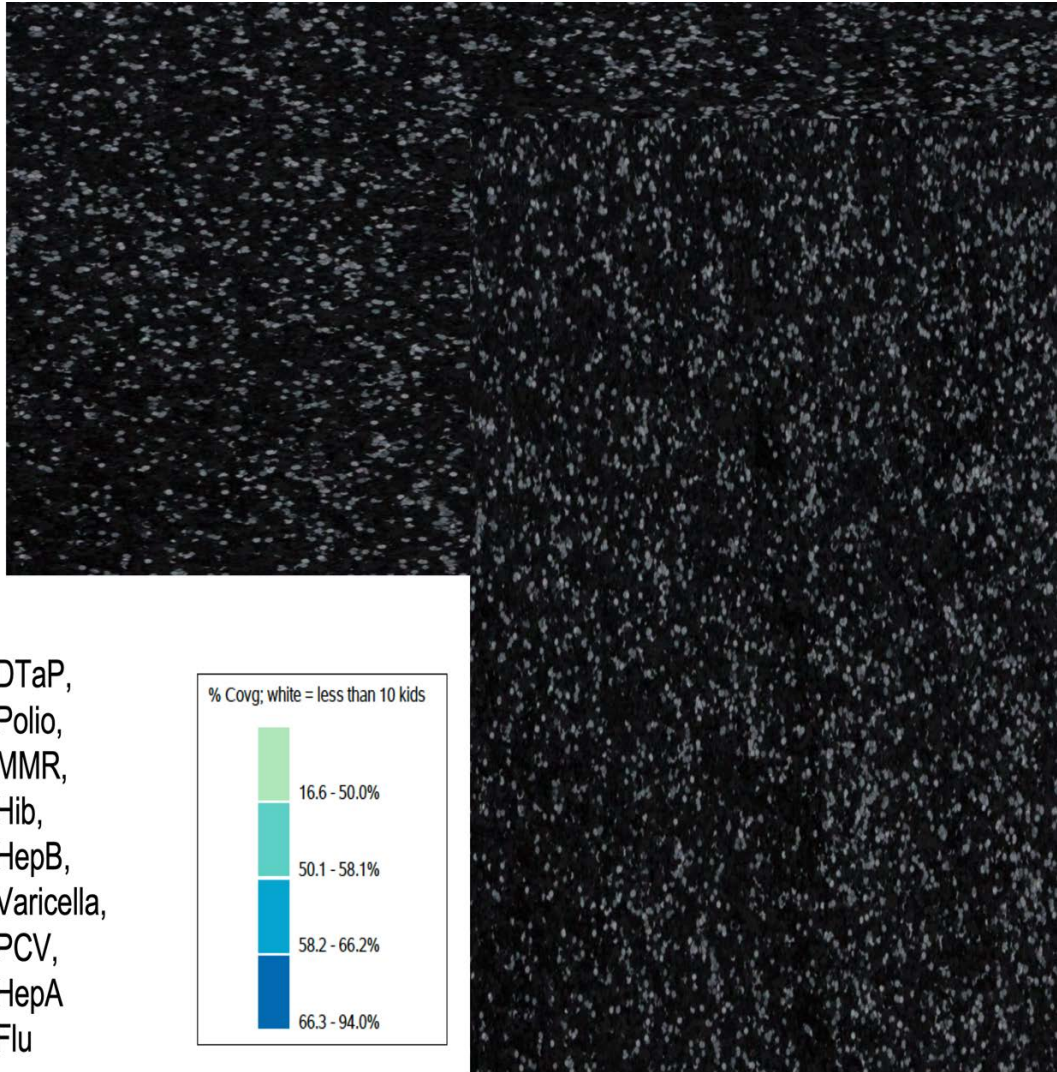
WHO (2019). Ten threats to global health in 2019. Retrieved from

<https://www.who.int/emergencies/ten-threats-to-global-health-in-2019>

Appendices

Appendix A

County Immunization Report



Prepared by the XXXX Department of Health and Human Services Immunization Division using data from the XXXX Care Improvement Registry (XXXX).

Appendix B

IRB Determination

*Available upon request

Appendix C

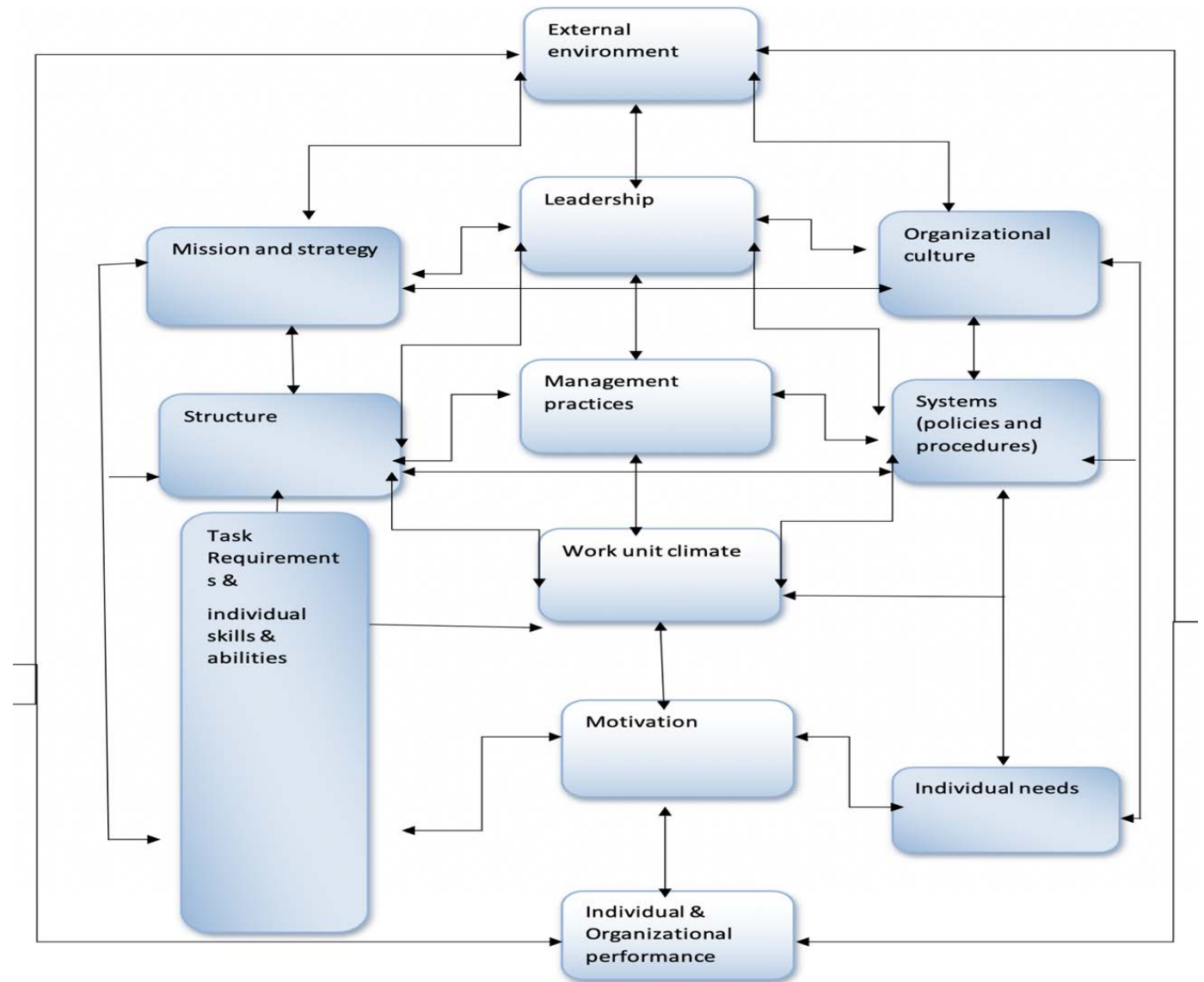
SWOT

Strengths	Weaknesses
<ul style="list-style-type: none"> • Access to care • Same day appointments • After hours care • Staff autonomy • Defined roles and ratios • Patient centered care • Comprehensive plans of care • Patient Preference • Early identification and intervention • Community engagement • Technology • Patient Choices • Coordination of Care • Safety • Efficiency 	<ul style="list-style-type: none"> • Continuous quality improvement • Consistent communication • Staff development and training programs • Referral management • Medication reconciliation • Inconsistent practice • Defined operation procedures • Appointment process • Data management Tracking • Reporting
Opportunities	Threats
<ul style="list-style-type: none"> • Engage staff • Process improvement • Restructure workflow • Focus on patient centric • Improve efficiency • System integration • Early intervention • Prevent readmissions • Case management • Expand after hours services • Self-efficacy and behavior management • Patient and family engagement • Population management • Preventive services 	<ul style="list-style-type: none"> • Lack of community • Non-compliance with treatment plans • Social challenges • Weak support system

Appendix D

Burke-Litwin Model

The arrows connecting the boxes are the open system principle of multiple impacts; these change in any category and affect all the remaining boxes.



A Model of Organizational Performance and Change. Burke, W. W., & Litwin, G. H. (1992). A causal model of organizational performance and change. *Journal of Management*, 18(3), 523-545.

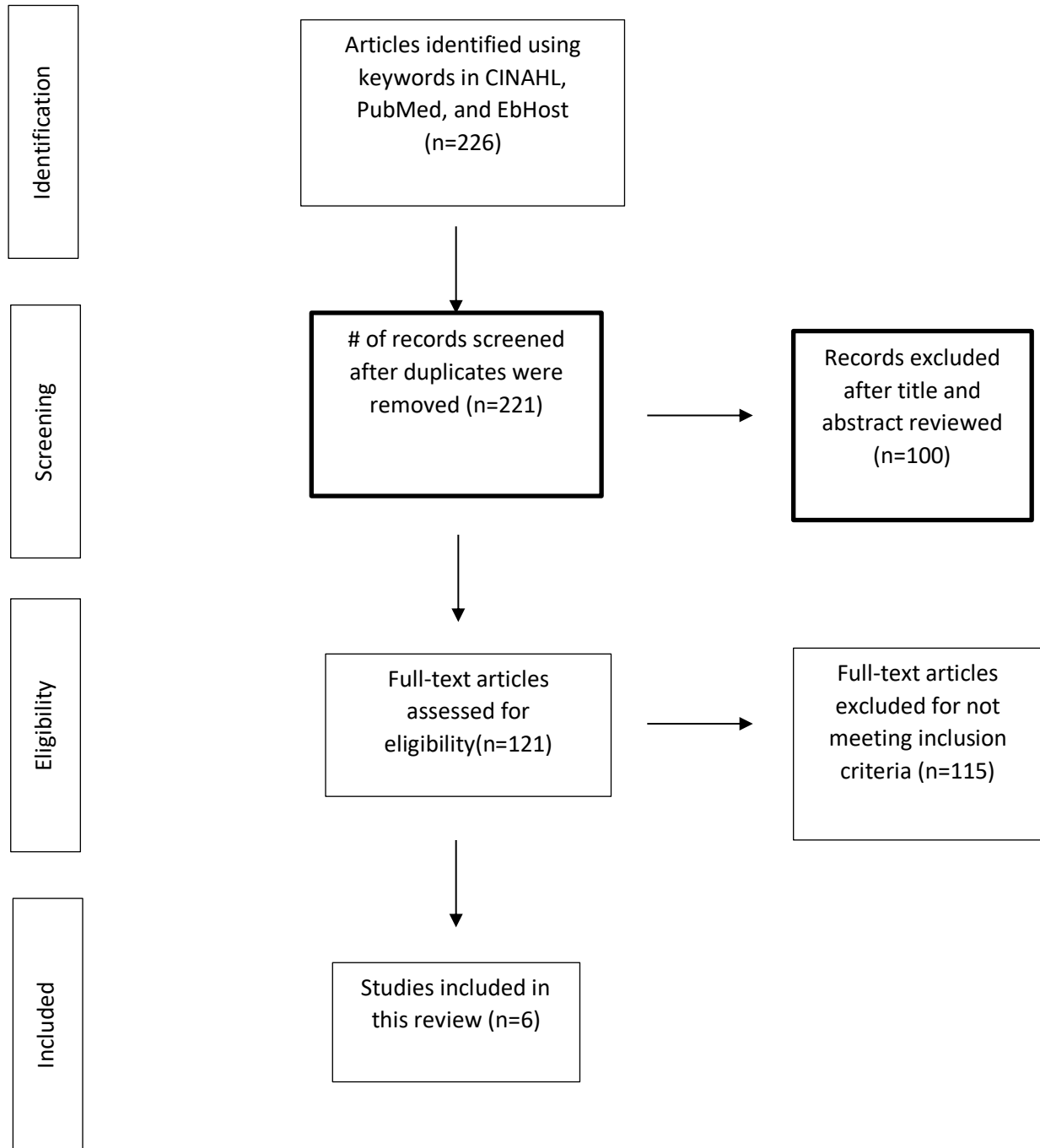
Appendix E

PRISMA

Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) is an evidenced-based method of reviewing articles in a systematic methodology. It includes a checklist and a flow diagram for deciding on the best literature to review given any particular study.

Appendix F

Literature Review Flow Chart



Author (Year) Purpose	Design (N)	Inclusion Criteria	Intervention vs Comparison	Results	Conclusion
Davila-Payan, C, et al. (Jan 2014) To determine the state-specific H1N1 vaccination coverage in children and high risk adults	Regression Analysis	Children chosen from the National Survey of Children's Health 2007 in order to determine low income.	Comparison	Distribution of vaccine was positively associated with programs focusing on school clinics and public sites. It was negatively associated with underserved population.	Vaccine venues and providers positively impact vaccination rates.
Stockwell et al. (Apr 2013). To assess impact of ethnicity, insurance, gender and language on vaccine coverage and timeliness	Multivariable analysis, Retrospective study	Children aged 6 months to 18 years as of Nov 1, 2009 2. visited one of the study sites between April 1, 2009 & March 31, 2010	Comparison	The majority of the H1N1 vaccine doses were administered within the clinic network. Within these populations, elementary school age children were more likely to receive from an outside network coverage than younger children and adolescents.	Racial/ethnic differences in coverage were worrisome. Minority parents were less likely to have their children vaccinated with Latino parents more likely to be concerned about adverse effects of vaccines.
Buttenheim et al.	Four Arm random	Adults > 18 years of age, proficient in	Intervention - Assess the effectiveness	Only one participant used the	Infant caregivers have a

<p>(Feb 2016)</p> <p>A behavioral economics intervention to increase pertussis vaccination among infant caregivers: A randomized feasibility trial</p>	<p>feasibility trial</p>	<p>English, eligible to receive Tdap vaccination per ACIP guidelines. Taken from Philadelphia Pediatric clinic</p>	<p>of vouchers in getting caregivers of low income children to get Tdap vaccinated in order to increase herd immunity.</p>	<p>voucher at a retail pharmacy. Participants cited time and effort as barriers</p>	<p>perceived lack of personal risk. Also time and effort are barriers even if money is not (the caregivers simply do not have enough time to get out to the pharmacy to get the vaccine)</p>
<p>Beel et al. (2014)</p> <p>Acceptability of immunization in adult contacts of infants: Possibility of expanding platforms to increase adult vaccine uptake</p>	<p>Qualitative Survey</p>	<p>Survey of predominantly Hispanic, underinsured and medically underserved adults (18 years and older) with infant contact</p>	<p>Intervention – participants were asked whether they were willing to receive vaccinations that day.</p>	<p>The majority of participants stated that they had received vaccinations as children. 73.3% were willing to receive influenza vaccinations and 50.5% were willing to receive pneumonia vaccines. Women were more likely to welcome vaccinations than men.</p>	<p>Different strategies are effective in promoting vaccination, but print and online educational material are not as effective. Immediate offering of vaccination is the most effective since it eliminates time, effort and money barriers.</p>
<p>Clayton et al. (2014)</p> <p>Influenza Vaccination</p>	<p>Data Analysis</p>	<p>Michigan children aged 6 months to 17 years</p>	<p>Comparison</p>	<p>17% of children were vaccinated against influenza.</p>	<p>More effective strategies for improving influenza</p>

of Michigan Children by Provider Type, 2010–2011				Public providers were less likely to vaccinate than private providers.	vaccination rates are necessary. Also, private clinics are more likely.
Molina (2017) Why didn't more ethnic Mexicans sign up for Obamacare	Retrospective Survey	Mexican Americans	n/a	The author went through historical records and current events in order to write about the suspicion that Mexican-Americans have in regards to Obamacare.	Low enrollment in the ACA by Mexican-Americans should can be attributed to a hostile immigration policy as well as a de facto second class citizenship for Hispanics.

Appendix G

Donabedian Model



Figure A: The Donabedian Model. Adapted from “The quality of care: How can it be assessed?” by A. Donabedian, 1988, JAMA, 260(12), p. 1743-1748. Copyright 1988 by John Wiley & Sons Ltd. Reprinted with permission.

Appendix H

Team Training Evaluation Summary

2018 Vaccine Management: Storage and Handling: Evaluation Summary

Please complete the following table, indicating how each objective was rated by attendees. Example:

Objective	Excellent	Good	Satisfactory	Unsatisfactory
Identify the steps needed to handle vaccines safely	10	8	2	0

Date of Presentation: 10/4/18 Location: ...

Objective	Excellent	Good	Satisfactory	Unsatisfactory
1. Identify and discuss storage and temperature monitoring equipment	6			
2. Identify and discuss the basic components of a vaccine management plan	6			
3. Discuss vaccine storage and handling practices	6			
4. Relationship of the objectives to the overall purpose/goal(s) of the activity	6			
5. Teaching expertise of the presenter	6			
6. Appropriateness of the teaching strategies	6			
	YES	NO		
Did the presenter disclose whether or not s/he has any significant relationship with a commercial supporter of the activity or other commercial supporter?	6			
If the presenter did not verbally disclose the above information, was it made available to you in the activity materials or brochure?	N/A			
Was the presentation fair, balanced and free of commercial bias?	6			

2018 Vaccines for Children: Evaluation Summary

Please complete the following table, indicating how each objective was rated by attendees. Example:

Objective	Excellent	Good	Satisfactory	Unsatisfactory
Discuss the purpose and the benefits of the VFC Program	10	8	2	0

Date of Presentation: 10-4-18 Location: ...

Objective	Excellent	Good	Satisfactory	Unsatisfactory
1. Discuss the purpose and the benefits of the VFC Program	6			
2. Discuss vaccine storage and handling principles	5	1		
3. Identify and discuss the basic components of the VFC Program	6			
4. Relationship of the objectives to the overall purpose/goal(s) of the activity	6			
5. Teaching expertise of the presenter	6			
6. Appropriateness of the teaching strategies	6			
7. Appropriateness of the physical facilities	6			
	YES	NO		
Did the presenter disclose whether or not s/he has any significant relationship with a commercial supporter of the activity or other commercial supporter?	6			
If the presenter did not verbally disclose the above information, was it made available to you in the activity materials or brochure?	N/A			
Was the presentation fair, balanced and free of commercial bias?	6			

Appendix I

Clinical Project Approval

*Available upon request

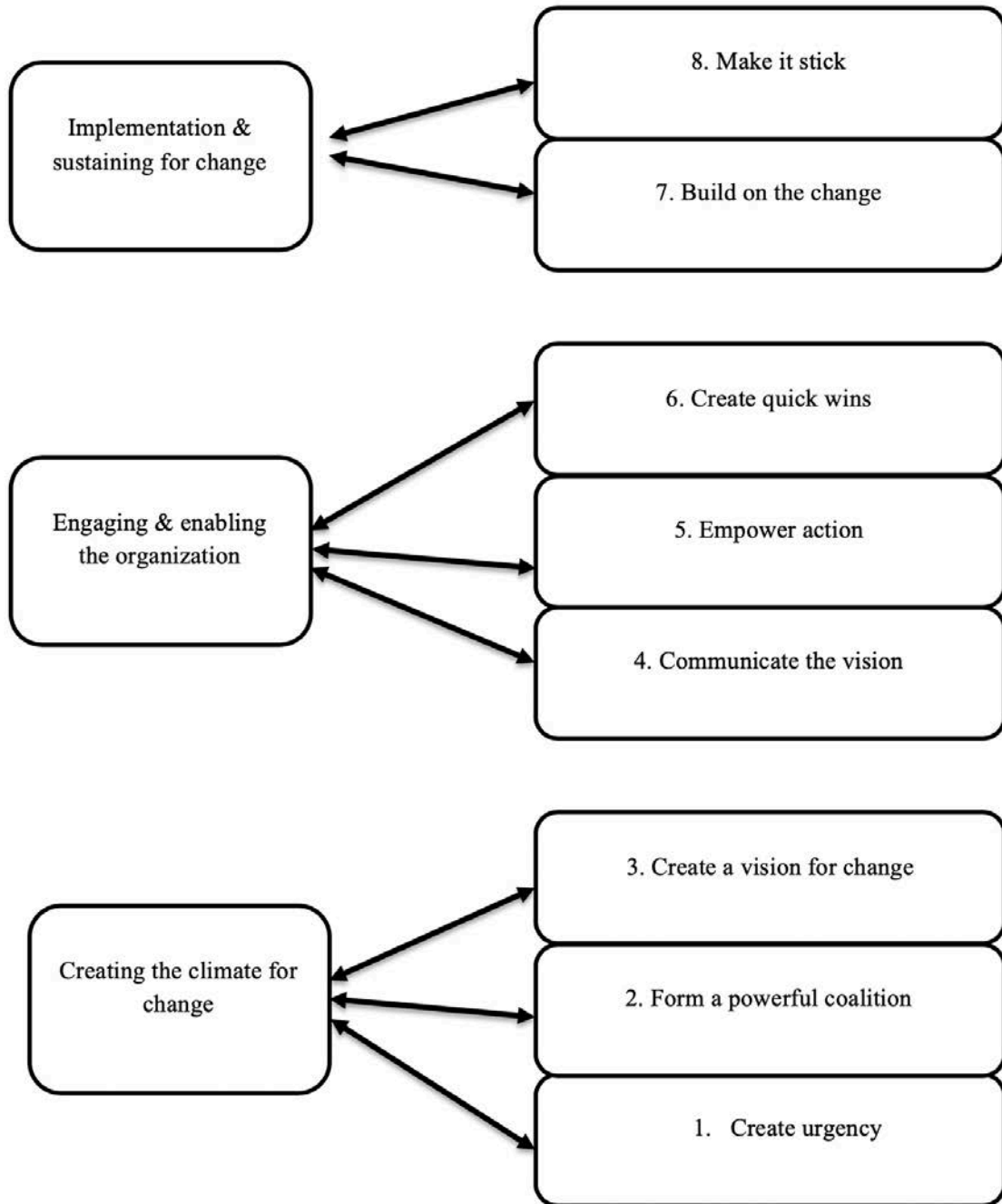
Appendix J

IRB Determination

*Available upon request

Appendix K

Kotter's 8 Step Change Model



Adapted from Kotter, J. P. (2012). *Leading Change: With a New Preface by the Author*. Harvard Business Review Press: Boston, Mass.

Appendix L

VFC Competency Test

Question 1: Which statement best defines cold chain management?

- A. Checking that vaccines are potent and effective when used
- B. Maintaining appropriate storage and handling conditions at every link in the cold chain.
- C. Minimizing exposure to excessive heat or cold.
- D. Checking vaccines for physical evidence of lost potency before administration.

Question 2: CDC recommends that storage and handling training should be done:

- A. As part of new employee orientation.
- B. Annually, as a refresher for all staff involved in immunization and vaccine management activities.
- C. Whenever new vaccines are added to the inventory.
- D. Whenever recommendations for storage and handling of vaccines are updated.
- E. All of the above.

Question 3: Which staff need to be trained on vaccine storage and handling?

- A. Only staff members who administer vaccines.
- B. Only the primary and alternate (backup) vaccine coordinators.
- C. Only new staff during orientation.
- D. All staff members who receive deliveries and/or handle or administer vaccines.

Question 4: You need to store a vaccine that requires freezer temperatures between -58°F to +5°F (-50°C to -15°C). Which type of storage unit would be acceptable for storing these vaccines?

- A. Freezer compartment of a household combination unit.
- B. A cooler.
- C. Stand-alone freezer unit.
- D. Dormitory-style refrigerator with internal freezer area.

Question 5: Each facility should have a temperature monitoring device (Digital data logger preferred) for:

- A. Each vaccine storage unit.
- B. Each emergency transport unit.
- C. At least one backup temperature monitoring device in case a primary device malfunctions or is out for calibration testing.
- D. A and B

E. All the above.

Question 6: Regarding temperature monitoring, CDC recommends:

- A. Reviewing and recording unit temperature at least 2 times each workday (morning and end of day).
- B. Post on a log, on or near each storage unit.
- C. Download and review stored temperature log data at least once a week.
- D. Keep logs and downloaded data at least 3 years or according to state record retention requirements.
- E. All the above.

Question 7: Maintaining stable temperatures in the storage unit is critical. Ensure storage unit works well and maintains temperatures by: (pick all that apply)

- A. Placing water bottles along walls, top shelf, floor, and door of refrigerator.
- B. Placing water bottles along walls, back, floor, and door of freezer.
- C. Placing storage unit in standard indoor room with temperatures at 20°C to 25°C (68°F to 77°F).
- D. Packing vaccines tightly in the storage unit.
- E. Removing bins and drawers in storage unit

Question 8: Which vaccine has been correctly stored in the refrigerator?

- A. Vaccine stored in a drawer inside the refrigerator.
- B. Vaccine that is stored in a labeled container/bin on the middle shelf, a few inches away from the wall.
- C. 2 different vaccines stored in the same container/bin on the middle shelf.
- D. Vaccine that is stored in the refrigerator door next to the diluent.

Question 9:

True or False

Diluents are interchangeable, as most are only sterile water.

Question 10: One of the most common reasons that refrigerators are out of temperature range is:

- A. Power outage
- B. The thermometer is broken
- C. Storage unit was unplugged

- D. Staff don't shut the refrigerator door
- E. The refrigerator thermostat is not working

Question 11:

True or False

Once the protective cap is removed from the vaccine, single dose vial or prefilled syringe, it must be used.

Question 12: It is flu season. Mike and his 3 year old son need their flu shots. You have Inactivated flu vaccine (IIV) which is given intramuscular (IM).

Which is the recommended site for an IM injection for a 3 year old?

- A. Gluteus muscle (buttock)
- B. Vastus lateralis muscle (anterolateral thigh)
- C. Deltoid muscle (upper arm)
- D. Back of the upper arm

Question 13: It is now Mike's turn to get his flu shot. Mike weighs 200 pounds. What needle length should you use?

- A. 2 -inch
- B. 1.5-inch
- C. 5/8-inch
- D. All of the above are okay to use
- E. None of the above

Question 14: "Take action" when it comes to temperature monitoring; this means?

(pick all that apply):

- A. Remove all vaccines that are out of range and discard them.
- B. Call the state/local VFC program (or manufacturer for private vaccines) for guidance.
- C. Notify the practice's vaccine coordinator to get the refrigerator temperature back in range.
- D. Thaw any vaccines that were frozen for 45 minutes.

Question 15: Which of the following containers is the BEST option for emergency vaccine transport?

- A. Any container as long as it contains dry ice.
- B. Portable vaccine refrigerators and portable vaccine freezers.
- C. Lunch containers
- D. Soft-sided collapsible coolers
- E. Hard-sided cooler.

Appendix M

Patient Survey

We are gathering information to see if you and your family are interested in receiving pediatric care at XXXX.

1. How many children do you have?

2. What are their ages?

--	--	--	--	--

3. Are you children's immunizations up to date? *Please circle*

- Yes.
- No.
- I am not certain

4. Would you like your children to receive pediatric care at Exalta Health? *Please circle*

- Yes
- No
- Maybe in the future

5. May I schedule an appointment for your children? - registration appointment first. *Please circle*

- Yes
- No
- Not at this moment

Estamos recopilando información para ver si usted y su familia están interesados en recibir atención pediátrica en XXXX.

1. Cuántos hijos tiene?

2. Cuáles son sus edades?

--	--	--	--	--	--

3. Están las vacunas de sus hijos al día? Por favor marque

- Si.
- No.
- No estoy seguro.

4. Desea que sus hijos reciban atención pediátrica en Exalta Health? Por favor marque

- Si
- No
- Quizás en el futuro

6. Puedo programar una cita para sus hijos? Por favor marque

- Si
- No
- No en este momento

Appendix N

Budget

Item	Description	Amount
Medical Grade Refrigerator	Helmer Scientific -iLR120 Laboratory Refrigerator 20CF (572 Liters).	\$ 5,867.48
Medical Grade Freezer	Helmer Scientific - iLF120 single door i.Series® Laboratory Freezer 20CF (572 Liters)	\$ 8,100.38
Thermometers and Notification Equipment Quantity. 2	It is essential to monitor temperatures in order to maintain the viability of the vaccines. In order to properly perform this tasks, the study needs thermometers and notification equipment.	\$ 1,136
3 Ring Binders (6)	Will be used to include project implementation protocol. Binders will be provided to manager, supervisor, and also placed on unit for nurses and nurse tech to review.	\$ 2.99 each for a total of \$ 17.94.
Laminated Page Holders for 3 Ring Binders: packet of 50 (6)	Will be used in Project binders.	\$ 5.99 each for a total of \$ 35.94
Travel Expenses to and from Facility	Per the IRS, mileage reimbursement for business use of a personal vehicle is a rate of 54.5 cents per mile in 2018. The Organization is 3.3 miles from the student home. The student plans to drive to and from the SNHC 16 times for a total of 138.6 miles	\$ 75.5
SNHC staff member to attend trainings	An essential part of the project will be training staff members. 3 to 5 hours long training sessions, food and training materials for at least 3 medical assistants, one RN and two physicians	\$ 375
DNP student Time	200 hours In-kind donation	\$ 5800
University pens, hand sanitizer, coffee mugs.	Items will be used to encourage and thank staff members to attend meetings about VFC guidelines.	GVSU Mug \$ 7.95 X 27= \$ 214.65 GVSU Pen \$1.95X 27= \$ 52.65

		GVSU hand sanitizer \$ 3.49 X 27= \$ 94.23 total of \$ 361.53
Grand Total:		\$ 21,769.77

Appendix O

Timeline

Perform Organizational assessment and literature review to guide the design of the formal quality improvement program	September 20, 2018
Submit Institution Review Board application	October 25, 2018
Present DNP project proposal to DNP project team in oral and written form	November 7, 2018
Obtain IRB approval from human research review committee	December 30, 2018
Data collection period concurrent with implementation	February 6, 2019
Develop formal quality improvement program components, consisting of policy and procedure manual, volunteer educational materials and a clinical dashboard	February 10, 2019
Implement quality improvement program components in organization – policy manual, volunteer education material, clinical dashboard	February 26, 2019
Export pre- and post-implementation data report from electronic health records. Import to Microsoft Excel	March 14, 2019
Compare pre and post implementation data seeking significant differences in documented compliance of designated outcome measures.	March 14, 2019
Generate a control chart for one outcome measure	March 19, 2019
Disseminate findings via oral defense presentation	April 8, 2019
Submit final DNP project to Scholar Works and University Graduate Studies Office	April 21, 2019

Activity	Previously Completed	2018			2019		
		Oct.	November	December	January	February	March
IRB Approval		X					
Prospectus	X						
Organizational Assessment	X						
Literature Review	X						
White Paper			X				
Project Proposal Defense			X				
Implement Project				X	X		
Final Project Defense						X	
Submit Project to Scholar Works							X

Appendix P

County Immunization Report Card

Data as of: December 31, 2018																																			
Population																																			
	2017 Census	██████	Diff.	% Diff.																															
Total	648,594	762,867	-114,273	-17																															
Adults (20yrs+)	473,742	557,798	-84,056	-17																															
Children (0-19yrs)	174,852	205,069	-30,217	-17																															
Immunization Sites																																			
		Count		%																															
Active MCIR Immunization Sites			369																																
Reported in the last 6 months			308	83																															
Active Vaccines for Children (VFC) Sites			91																																
Reported in the last 6 months			90	98																															
Reg. Reporting Flu Sentinels (% of Total Sites)			14	67																															
<table border="1" style="width: 100%;"> <tr> <td colspan="2">Statet is ranked 29th for 4313314</td> </tr> <tr> <td colspan="2">Your County Immunization Rank n = 84 counties</td> </tr> <tr> <td>43133142 Coverage: (19-35mos)</td> <td>4</td> </tr> <tr> <td>1323213 Coverage: (13-17 years)</td> <td>6</td> </tr> <tr> <td>Waivers: (kindergarten, 7th grade & others)</td> <td>19</td> </tr> <tr> <td>Flu Coverage : (6 months through 8 years, complete)</td> <td>5</td> </tr> </table>						Statet is ranked 29th for 4313314		Your County Immunization Rank n = 84 counties		43133142 Coverage: (19-35mos)	4	1323213 Coverage: (13-17 years)	6	Waivers: (kindergarten, 7th grade & others)	19	Flu Coverage : (6 months through 8 years, complete)	5																		
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Waivers: (kindergarten, 7th grade & others)	19																																		
Flu Coverage : (6 months through 8 years, complete)	5																																		
Immunization Coverage Levels, Rankings and Goals by Select Vaccines and Age Groups																																			
Measure	XXXX ██████	% Diff.*	State Avg (██████)	US Average	HP 2020 Goal																														
19 through 35 months																																			
Birth Dose Hep B coverage	85.7	0.1	79.7	73.6	85%																														
4313314 coverage	82.7	-0.3	74.3	70.4	80%																														
43133142 coverage	70.0	0.4	58.5	-	-																														
2+ Hep A	71.4	0.4	60.3	59.7	85%																														
4+ DTaP	85.0	-0.3	77.4	83.2	90%																														
PCV Complete	88.9	-0.4	83.3	82.4	90%																														
Rota. Complete(8-24 months)	79.2	-1.5	71.0	-	-																														
WIC coverage (4313314)	86.3	-0.9	78.3	67.3	-																														
Medicaid coverage (4313314)	83.3	-0.3	73.1	-	-																														
13 through 17 years																																			
132321 coverage	78.2	-2.1	73.5	-	-																														
1323213 coverage	50.5	-0.9	39.1	-	-																														
	81.2	-2.8	76.4	88.7	80%**																														
1+ MenACWY	83.5	-0.2	79.4	85.1	80%**																														
HPV Complete (Females)	55.0	0.1	43.2	53.1	80%**																														
HPV Complete (Males)	50.7	0.8	39.8	44.3	-																														
<table border="1" style="width: 100%;"> <tr> <th>Vaccine</th> <th>Description</th> </tr> <tr> <td>2+ Hep A</td> <td>2 or more doses of Hepatitis A vaccine</td> </tr> <tr> <td>4+ DTaP</td> <td>4 or more doses of DTaP/DTP/DT</td> </tr> <tr> <td>1+ Tdap</td> <td>1 or more doses of Tdap vaccine administered at 11 years of age and older</td> </tr> <tr> <td>1+ MenACWY</td> <td>1 or more doses of meningococcal conjugate vaccine</td> </tr> <tr> <td>1+ PPSV23</td> <td>1 or more dose of PPSV23 vaccine</td> </tr> <tr> <td>1+ PCV13</td> <td>1 or more dose of PCV13 vaccine</td> </tr> <tr> <td>1+PCV13 & 1+ PPSV23</td> <td>1 more dose of each pneumococcal vaccine (PCV13 & PPSV23)</td> </tr> <tr> <td>1+ Flu</td> <td>1 or more doses of influenza in the specified season</td> </tr> <tr> <th>Vaccine Series</th> <th>Description</th> </tr> <tr> <td>4313314</td> <td>4 or more doses of DTaP/DTP/DT, 3 or more doses of Polio, 1 or more dose of MMR, 3 or more doses of Hib, 3 ore more doses of HepB, 1 or more dose of</td> </tr> <tr> <td>43133142</td> <td>Varicella, 4 or more doses of PCV</td> </tr> <tr> <td></td> <td>4 or more doses of DTaP/DTP/DT, 3 or more doses of Polio, 1 or more dose of MMR, 3 or more doses of Hib, 3 ore more doses of Hep B, 1 or more dose of Varicella, 4 or more doses of PCV, 2 or more doses of HepA</td> </tr> <tr> <td>132321</td> <td>1 or more doses of Tdap, 3 or more doses of Polio, 2 or more doses of MMR, 3 or more doses of HepB, 2 ore more doses of varicella vaccine, 1 or more dose of MenACWY</td> </tr> <tr> <td>1323213</td> <td>1 or more doses of Tdap, 3 or more doses of Polio, 2 or more doses of MMR, 3 or more doses of HepB, 2 ore more doses of varicella vaccine, 1 or more dose of MenACWY, HPV complete (with 2 or 3 ore doses (Males & Females))</td> </tr> </table>						Vaccine	Description	2+ Hep A	2 or more doses of Hepatitis A vaccine	4+ DTaP	4 or more doses of DTaP/DTP/DT	1+ Tdap	1 or more doses of Tdap vaccine administered at 11 years of age and older	1+ MenACWY	1 or more doses of meningococcal conjugate vaccine	1+ PPSV23	1 or more dose of PPSV23 vaccine	1+ PCV13	1 or more dose of PCV13 vaccine	1+PCV13 & 1+ PPSV23	1 more dose of each pneumococcal vaccine (PCV13 & PPSV23)	1+ Flu	1 or more doses of influenza in the specified season	Vaccine Series	Description	4313314	4 or more doses of DTaP/DTP/DT, 3 or more doses of Polio, 1 or more dose of MMR, 3 or more doses of Hib, 3 ore more doses of HepB, 1 or more dose of	43133142	Varicella, 4 or more doses of PCV		4 or more doses of DTaP/DTP/DT, 3 or more doses of Polio, 1 or more dose of MMR, 3 or more doses of Hib, 3 ore more doses of Hep B, 1 or more dose of Varicella, 4 or more doses of PCV, 2 or more doses of HepA	132321	1 or more doses of Tdap, 3 or more doses of Polio, 2 or more doses of MMR, 3 or more doses of HepB, 2 ore more doses of varicella vaccine, 1 or more dose of MenACWY	1323213	1 or more doses of Tdap, 3 or more doses of Polio, 2 or more doses of MMR, 3 or more doses of HepB, 2 ore more doses of varicella vaccine, 1 or more dose of MenACWY, HPV complete (with 2 or 3 ore doses (Males & Females))
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1+ PPSV23	1 or more dose of PPSV23 vaccine																																		
1+ PCV13	1 or more dose of PCV13 vaccine																																		
1+PCV13 & 1+ PPSV23	1 more dose of each pneumococcal vaccine (PCV13 & PPSV23)																																		
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Vaccine Series	Description																																		
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43133142	Varicella, 4 or more doses of PCV																																		
	4 or more doses of DTaP/DTP/DT, 3 or more doses of Polio, 1 or more dose of MMR, 3 or more doses of Hib, 3 ore more doses of Hep B, 1 or more dose of Varicella, 4 or more doses of PCV, 2 or more doses of HepA																																		
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1323213	1 or more doses of Tdap, 3 or more doses of Polio, 2 or more doses of MMR, 3 or more doses of HepB, 2 ore more doses of varicella vaccine, 1 or more dose of MenACWY, HPV complete (with 2 or 3 ore doses (Males & Females))																																		

Appendix Q

Team Effectiveness

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
Purpose	5	4.6571429	4.7142857	0.2962349	4.1428571	4.8571429
rules	5	4.3714286	4.4285714	0.3288818	4.0000000	4.8571429
process	5	4.4571429	4.5714286	0.2347382	4.1428571	4.7142857
relate	5	4.6571429	4.7142857	0.2962349	4.1428571	4.8571429
inter	5	4.3714286	4.4285714	0.2390457	4.0000000	4.5714286
problem	5	4.3428571	4.2857143	0.1277753	4.2857143	4.5714286
passion	5	4.6285714	4.7142857	0.4472136	3.8571429	5.0000000
skill	5	4.6857143	4.8571429	0.3097069	4.1428571	4.8571429

Purpose and goals		Roles		Team processes		Team relationships	
1	4.14	2	4.43	3	4.71	4	4.58
9	4.14	10	4.0	11	4.14	12	4.29
17	4.85	18	4.43	19	4.57	20	4.71
25		26		27		28	
33		34		35		36	
41		42		43		44	
49		50		51		52	
Total =	13.13	Total =	12.86	Total =	13.42	Total =	13.85
Average	86.7%	Average	87.14%	Average	86.58%	Average	86.15%
Intergroup relations		Problem solving		Passion and commitment		Skills and learning	
5	4.57	6	4.29	7	4.85	8	4.85
13	4	14	4	15	4.14	16	4
21	4.29	22	4.29	23	4.7	24	4.9
29		30		31		32	
37		38		39		40	
45		46		47		48	
53		54		55		56	
Total =	12.86	Total =	12.58	Total =	13.69	Total =	13.75
Average =	87.14%	Average =	87.42%	Average =	86.31%	Average =	86.25%
Total of all 8 average scores =		87%		= Team Effectiveness Score			

Appendix R

Pre and Post Team Training Competency Test

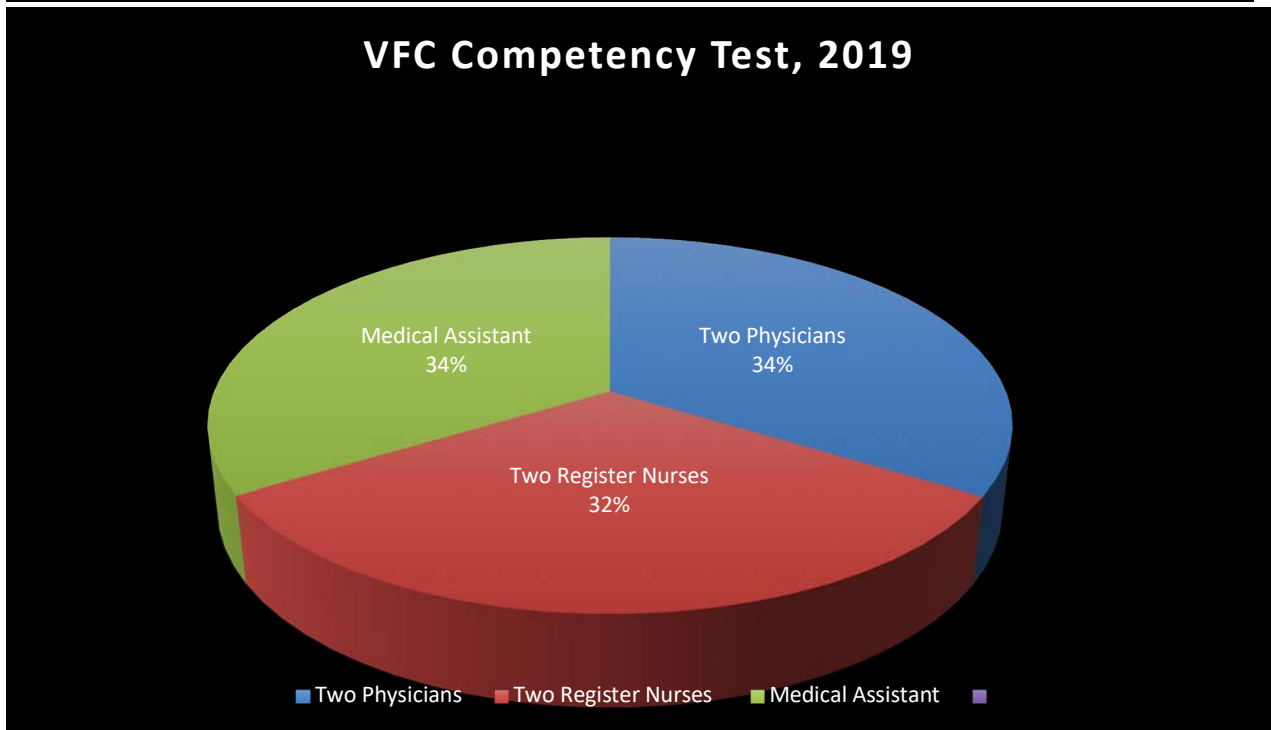
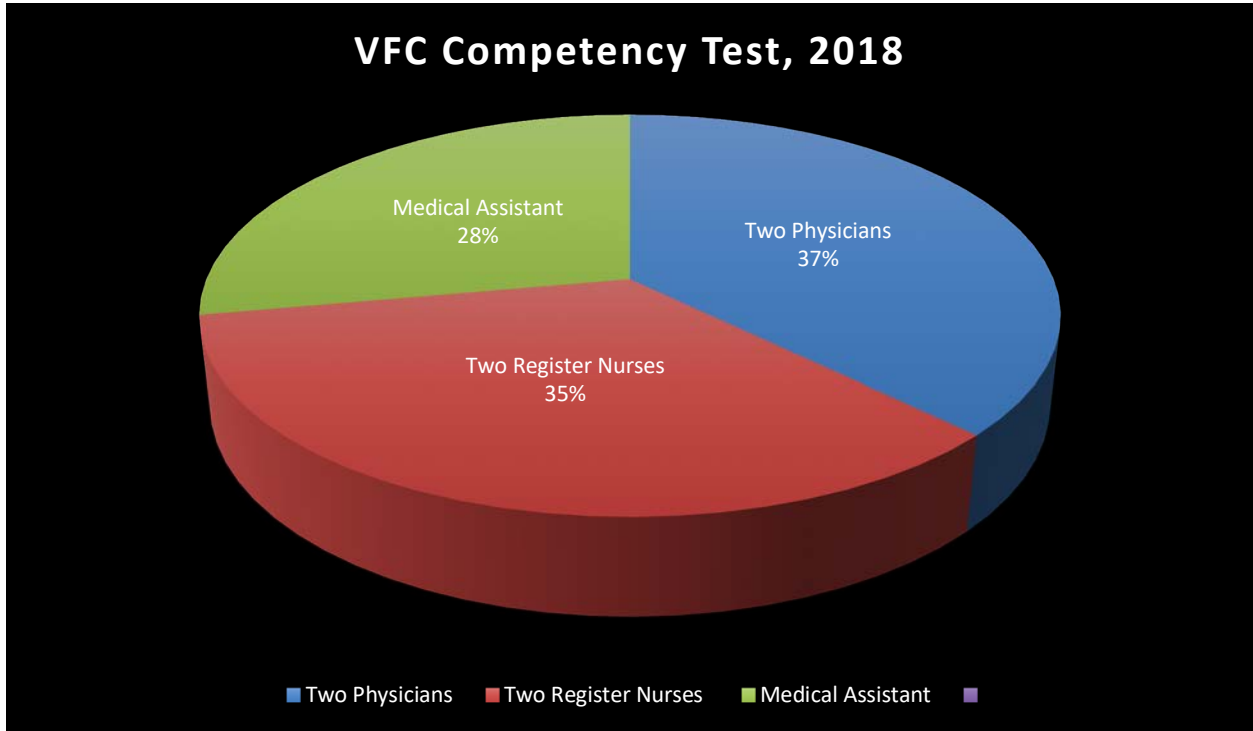


Table of group by gender			
Group	Gender (gender)		
Frequency			
Percent			
Row Pct			
Col Pct	Male	Female	Total
2018	1	4	5
	10.00	40.00	50.00
	20.00	80.00	
	50.00	50.00	
2019	1	4	5
	10.00	40.00	50.00
	20.00	80.00	
	50.00	50.00	
Total	2	8	10
	20.00	80.00	100.00

Table of group by role				
Group	Role (role)			
Frequency				
Percent				
Row Pct				
Col Pct	Physician	RN	MA	Total
2018	2	2	1	5
	20.00	20.00	10.00	50.00
	40.00	40.00	20.00	
	50.00	50.00	50.00	
2019	2	2	1	5
	20.00	20.00	10.00	50.00
	40.00	40.00	20.00	
	50.00	50.00	50.00	
Total	4	4	2	10
	40.00	40.00	20.00	100.00

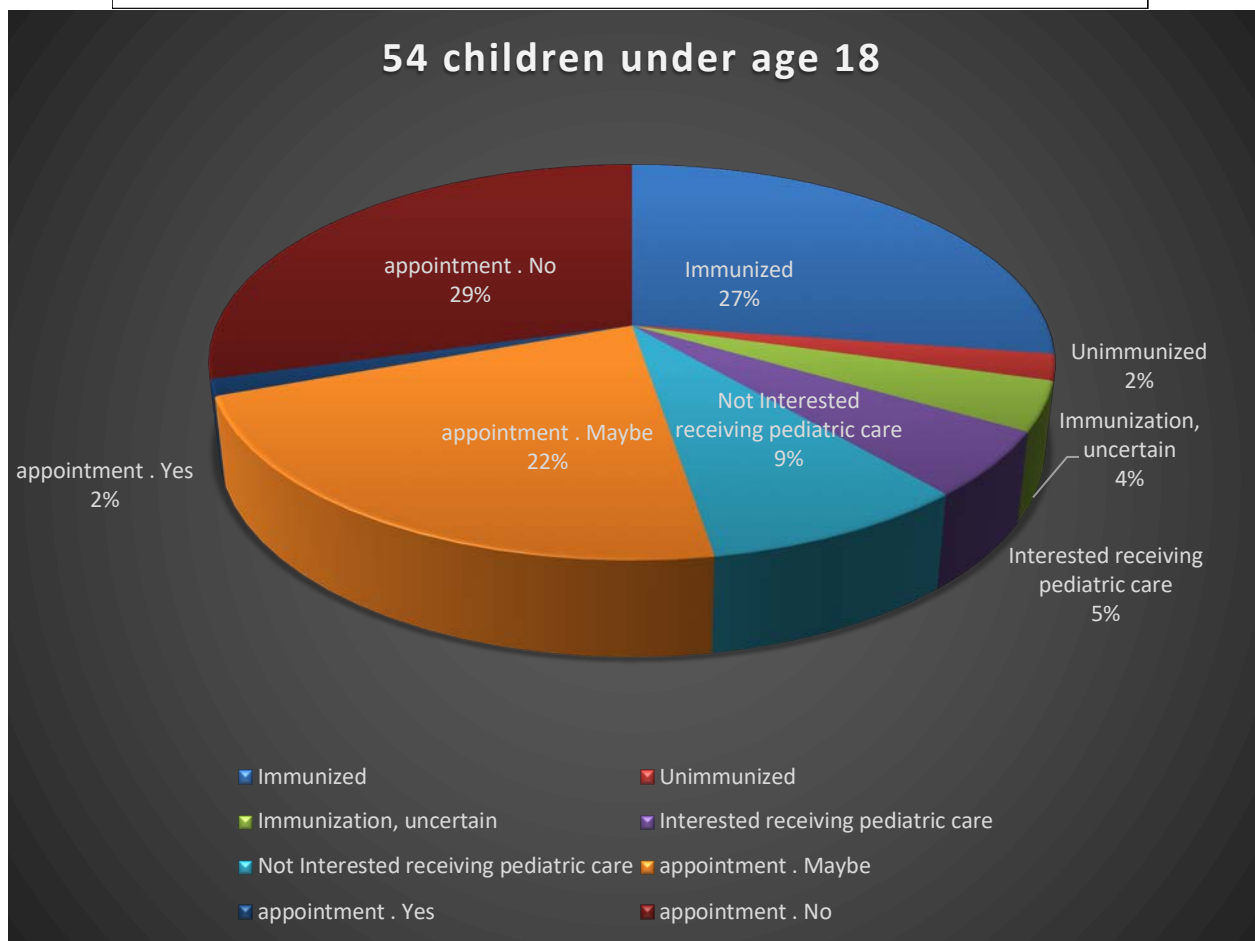
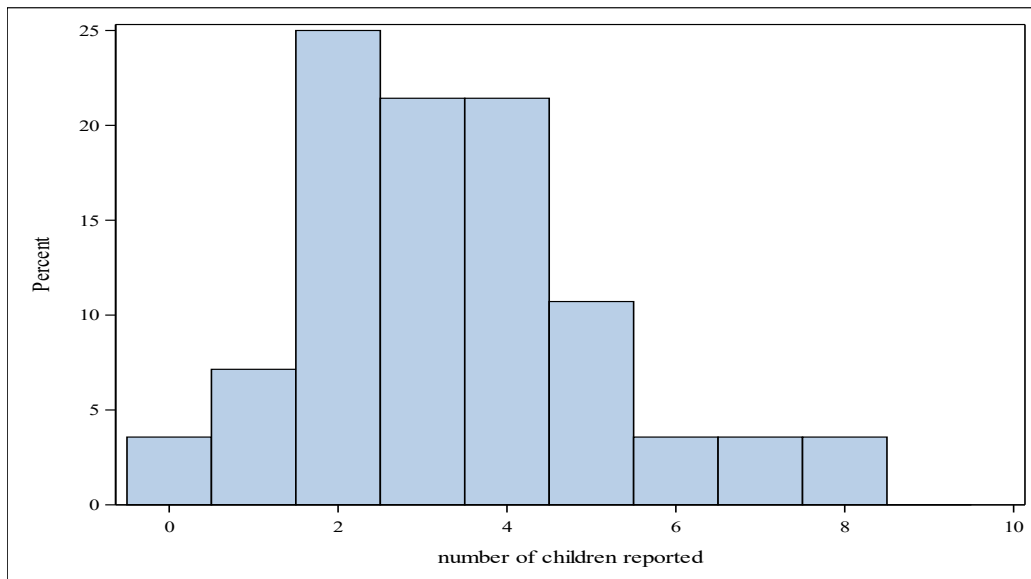
Group -2018

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
Percent correct	5	0.81	0.80	0.10	0.67	0.93
numb correct	5	12.20	12.00	1.48	10.00	14.00

Group-2019

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
Percent correct	5	0.93	0.93	0.05	0.87	1.00
numb correct	5	14.00	14.00	0.71	13.00	15.00

Appendix S
Patients Survey



Ethnicity		
Ethnicity	Frequency	Percent
Caucasian	2	7.14
Hispanic	26	92.86

Analysis Variable: child only					
N	Mean	Median	Std Dev	Minimum	Maximum
54	9.35	10.00	5.26	0.00	18.00

Q4		
Q4	Frequency	Percent
0	1	3.57
yes	5	17.86
no	8	28.57
Maybe in the future	14	50.00

Q5		
Q5	Frequency	Percent
0	1	3.57
yes	3	10.71
no	7	25.00
Not at this moment	17	60.71

Q3		
Q3	Frequency	Percent
0	1	3.57
yes	22	78.57
no	2	7.14
I am not certain	3	10.71

Appendix T

Federal Poverty Guidelines

2018 Federal Poverty Guidelines Community Clinical Services													
Amount to charge	No admin fee						Percent to charge	\$4 admin fee					
	Annual		Weekly		Monthly			Annual		Weekly		Monthly	
	From	To	From	To	From	To		From	To	From	To	From	To
Family Size							Family Size						
1	\$0	\$12,140	\$0	\$233	\$0	\$1,012	1	\$12,141	\$16,753	\$234	\$322	\$1,013	\$1,396
2	\$0	\$16,460	\$0	\$317	\$0	\$1,372	2	\$16,461	\$22,715	\$318	\$437	\$1,373	\$1,893
3	\$0	\$20,780	\$0	\$400	\$0	\$1,732	3	\$20,781	\$28,676	\$401	\$551	\$1,733	\$2,390
4	\$0	\$25,100	\$0	\$483	\$0	\$2,092	4	\$25,101	\$34,638	\$484	\$666	\$2,093	\$2,887
5	\$0	\$29,420	\$0	\$566	\$0	\$2,452	5	\$29,421	\$40,600	\$567	\$781	\$2,453	\$3,383
6	\$0	\$33,740	\$0	\$649	\$0	\$2,812	6	\$33,741	\$46,561	\$650	\$895	\$2,813	\$3,880
7	\$0	\$38,060	\$0	\$732	\$0	\$3,172	7	\$38,061	\$52,523	\$733	\$1,010	\$3,173	\$4,377
8	\$0	\$42,380	\$0	\$815	\$0	\$3,532	8	\$42,381	\$58,484	\$816	\$1,125	\$3,533	\$4,874
8+ members, add per member	\$0	\$4,320	N/A	\$83	N/A	\$360	8+ members, add per member	N/A	\$5,962	N/A	\$115	N/A	\$497

Amount to charge	\$8 admin fee						Percent to charge	\$13 admin fee					
	Annual		Weekly		Monthly			Annual		Weekly		Monthly	
	From	To	From	To	From	To		From	To	From	To	From	To
Family Size							Family Size						
1	\$16,754	\$21,245	\$323	\$409	\$1,397	\$1,770	1	\$21,246	\$25,798	\$410	\$496	\$1,772	\$2,150
2	\$22,716	\$28,805	\$438	\$554	\$1,894	\$2,400	2	\$28,806	\$34,978	\$555	\$673	\$2,402	\$2,915
3	\$28,677	\$36,365	\$552	\$699	\$2,391	\$3,030	3	\$36,366	\$44,158	\$700	\$849	\$3,032	\$3,680
4	\$34,639	\$43,925	\$667	\$845	\$2,888	\$3,660	4	\$43,926	\$53,338	\$846	\$1,026	\$3,662	\$4,445
5	\$40,601	\$51,485	\$782	\$990	\$3,384	\$4,290	5	\$51,486	\$62,518	\$991	\$1,202	\$4,292	\$5,210
6	\$46,562	\$59,045	\$896	\$1,135	\$3,881	\$4,920	6	\$59,046	\$71,698	\$1,137	\$1,379	\$4,922	\$5,975
7	\$52,524	\$66,605	\$1,011	\$1,281	\$4,378	\$5,550	7	\$66,606	\$80,878	\$1,282	\$1,555	\$5,552	\$6,740
8	\$58,485	\$74,165	\$1,126	\$1,426	\$4,875	\$6,180	8	\$74,166	\$90,058	\$1,427	\$1,732	\$6,182	\$7,505
8+ members, add per member	N/A	\$7,560	N/A	\$145	N/A	\$630	8+ members, add per member	N/A	\$9,180	N/A	\$177	N/A	\$765

Amount to charge	\$18 admin fee						Percent to charge	\$23 admin fee					
	Annual		Weekly		Monthly			Annual		Weekly		Monthly	
	From	To	From	To	From	To		From	To	From	To	From	To
Family Size							Family Size						
1	\$25,799	\$30,350	\$497	\$584	\$2,151	\$2,529	1	\$30,351		\$585		\$2,530	
2	\$34,979	\$41,150	\$674	\$791	\$2,916	\$3,429	2	\$41,151		\$792		\$3,430	
3	\$44,159	\$51,950	\$850	\$999	\$3,681	\$4,329	3	\$51,951		\$1,000		\$4,330	
4	\$53,339	\$62,750	\$1,027	\$1,207	\$4,446	\$5,229	4	\$62,751		\$1,208		\$5,230	
5	\$62,519	\$73,550	\$1,203	\$1,414	\$5,211	\$6,129	5	\$73,551		\$1,415		\$6,130	
6	\$71,699	\$84,350	\$1,380	\$1,622	\$5,976	\$7,029	6	\$84,351		\$1,623		\$7,030	
7	\$80,879	\$95,150	\$1,556	\$1,830	\$6,741	\$7,929	7	\$95,151	↑	\$1,831	↑	\$7,930	↑
8	\$90,059	\$105,950	\$1,733	\$2,038	\$7,506	\$8,829	8	\$105,951		\$2,039		\$8,830	
8+ members, add per member	N/A	\$10,800	N/A	\$208	N/A	\$900	8+ members, add per member	\$10,801	↑	\$209	↑	\$901	↑

Appendix U

Approval of Use for Burke-Litwin Model



Form Submission:

Copyright Permissions Form

First Name: Akmal

Last Name: Saydazamov

Email Address: saydazaa@mail.gvsu.edu

Company: Grand Valley State University

Job Title: DNP student

Non-Profit?: No

Country: United States

State: MI

What content: Book content; Blog, article, journal

What specifically: figures*; tables*

How do you plan to use: Using figures/tables of the 8-step model to implement change for a DNP student project and dissertation.

In what format: Print

Will you be translating: No

Additional comments: This is for use in a student dissertation, not further printed material.

Additional Comments: You can use the 8 steps graphic as long as it is cited using standard citation rules and it is for non-profit.

Appendix V

Approval of Use for Burke-Litwin Model from Sage Publishing



First Name: Akmal

Last Name: Saydazamov

Title: A Causal Model of Organizational Performance and Change

Author: W. Warner Burke, George H. Litwin

Publication: Journal of Management

Publisher: SAGE Publications

Date: 09/01/1992

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