

IMPLEMENTATION OF PRACTICE MANAGEMENT STRATEGIES IN A LOCAL
HEALTH DEPARTMENT: WILL IT INCREASE CLINIC EFFICIENCY AND
IMPROVE CUSTOMER SATISFACTION?

by

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Abstract

MELODY MCCUNE. Implementation of practice management strategies in a local health department: Will it increase clinic efficiencies and improve customer satisfaction? (Under the direction of DR. DONNA KAZEMI)

Objectives: The objectives of the project were to improve patient satisfaction scores of child health patients in the local health department and to decrease visit wait time.

Method: The design was an evaluation of prospective interventions that were identified from a clinical flow analysis (CFA). The customer satisfaction and time study data were collected pre and post intervention. A CFA and customer satisfaction survey conducted and followed 5 well-child visits from arrival to the agency to check out. Evidence based interventions were developed from the issues that were identified. Three months post implementation the customer satisfaction surveys and 5 CFA were repeated. Evaluation was completed to compare pre and post data collected on satisfaction and visit time.

Results: Findings demonstrate that the newly implemented evidence-based practices facilitated a statistically significant decrease in visit time ($p < 0.000$), and a significant increase in customer satisfaction related to visit time ($p < 0.000171$) in children that received a well child visit following intervention. The mean pre-intervention for visit time was 107 minutes, while the mean post intervention visit time was 72 minutes, with a total overall decrease of 35 minutes/visit.

Conclusion: Findings of this project support the role of implementing evidence-based practices in a local health department clinic setting to improve customer satisfaction and improve clinic efficiencies. Implementing EBP's helped to decrease well child visit times and left the customers more satisfied.

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CHAPTER 1: INTRODUCTION

Background

According to the 2013 Public Health Incubator Report, North Carolina ranks 44th in the nation in the amount of funding allotted for public health (Trust for Americas Health, 2013). North Carolina health departments rely heavily on federal and county government to supplement funding. Health departments across North Carolina are experiencing massive reductions in the amount of funding federal government is putting into their services. Since 2003, North Carolina health departments have had Maternal Child Health Block grant reductions of \$92 million dollars from the federal government (Association of Maternal and Child Health Programs, 2016). If this pattern of decreasing funding continues, it will be hard for health departments to sustain their current level of services.

North Carolina Association of Local Health Departments (2010) report that there has been a steady decrease in the Medicaid Cost Study funding and Block Grant funding that LHDs receive, however, there is continued facility and staffing costs to be maintained. With decreased funding and resources there is an immediate need for health departments across North Carolina to operate more efficiently and to be more cost-effective.

The local health department have reported that up to 20% of patients are not showing up for scheduled appointments (Garrett, 2017). This can lead to excessive wait times for well-child health appointments on days that all the appointments show up. The

patients seeking services at the LHD participating in this project are experiencing excessive wait times and are dissatisfied with the long wait times (Garrett, 2017).

Problem Statement

As county budgets tighten and commissioners look for ways to decrease their expenditures LHDs are facing major decreases in their funding from local government. LHDs in North Carolina are experiencing decreased revenue and funding, but facility and staffing costs continue to increase (North Carolina Association of Local Health Departments, 2010) The LHD is also experiencing excessive wait times for patients in the well-child clinic, an average of greater than 2 hours (Garrett, 2017). The health department staff attribute the long wait times to inefficient clinic processes. Long wait time is having a negative effect on patient satisfaction scores and the volume of patients seen. The LHD wants to explore evidence-based strategies they could implement to help them run more efficient and to sustain current services.

Purpose of Project

The project includes implementing the practice management(PM) program in a local health department clinic setting. The health department is currently experiencing excessive patient wait times, low patient satisfaction scores and reductions in their operating budgets and revenues. PM is an evidence-based program that creates the structure, skills and processes to understand clinical services and take data-driven actions to improve patient outcomes (Rocco, Dubrey & Mears, 2014). The purpose of PM is to improve the clinical outcomes, patient experience of care, and to optimize staff resources to the highest level of skill and licensure (Rocco, Dubrey & Mears, 2014). It also helps

to reduce costs through system waste reduction, and free resources for needed public health strategies (Rocco, Dubrey & Mears, 2014). Clinical care management provides a “provincial vehicle to identify, establish and promote best practice clinical guidelines to achieve continuous clinical improvement in the day-to-day delivery of care (Best, et al., 2016, p. 303).

Significance of the Project

The LHD that is involved in this project reported that their current wait times for clients is averaging around 2 hours (Garrett, 2017). The LHD also reported that the customer satisfaction surveys were reviewed and showed that patients were dissatisfied with the long wait times (Garrett, 2017). This project provides a process to establish and promote best practice clinical guidelines to achieve clinical improvement in everyday operations (Best, et al., 2016, p. 303). The project also encourages local health department clinics to work at their highest efficiency and to develop practices that are evidence-based and sustainable. This project is significant because it will help to improve access to care for children who are uninsured or underinsured. The LHD serves these populations and provides free or reduced fees services. By improving efficiency, the LHD will be able to offer more appointments to these populations.

The scholarly project impacts children birth-21 years of age who receive well-child care at the LHD child health clinic. However, the children’s parents/guardians will also be impacted by the decrease wait times, increased satisfaction with services and improved access to care. The staff will be impacted by this program by the

implementation of best practices in day to day delivery of care. This will improve clinic flow and decrease staff frustrations with issues in the clinic flow and processes.

The professionals that will be engaged in the components of the project will include the medical director, nurse practitioner, physician assistant, management team, clerical staff, billing staff, clinic nurses and lab staff. It will be important to include every discipline in the planning process so that different perspectives can be shared and taken into consideration during the process. This will help staff to feel like they have a chance to share their perspective and will help to achieve staff support of the new EBP's. If staff are supportive of the new processes, then there will be less resistance to change (IHI, 2016).

Clinical Question

In a local health department well child clinic with excessive wait times, how does implementing practice management clinic flow analysis strategies compared to the current clinic flow processes affect patient wait time and client satisfaction within three months?

Project Objectives

The objectives of analysis and implementation of strategies are;

1. To improve the patient satisfaction scores of child health patients in the local health department. The expected outcome would be patient satisfaction scores will reflect a score of 90% or more patients rating visit satisfaction as good-excellent three months' post implementation of the project.
2. The reduction of clinic wait times in the child health well-clinic through system waste reduction and increasing efficiencies. The overall long-term outcome will be for the local

health department to experience a 5% reduction in wait times in three months' post project implementation. Outcomes will include:

- Increased knowledge of the Plan Do Study Act (PDSA's) cycles.
- Increased knowledge of PM strategies and processes.
- Completed clinic flow assessments of current clinic process for patients from check-in to check-out to identify issues in the flow.
- Implementation of EBP's that replace current non-evidence-based practices.
- Increased application of best practices.
- Data will be collected and analyzed.

CHAPTER 2: LITERATURE REVIEW

Literature Review

There have been many research studies on lean process strategies in various diverse healthcare settings across the nation. Lean healthcare is utilized to develop an agency culture that is “characterized by increased patient and other stakeholder satisfaction through continuous improvements, in which all employees (managers, physicians, nurses, laboratory people, technicians, office people etc.) actively participate in identifying and reducing non-value-adding activities” (Dahlgard et al., 2011, p. 677). A literature review was conducted utilizing the search engines of MEDLINE, CINHALL, PUBMED, and the Cochrane library. The key words used for the search were *practice management, lean process, quality improvement, best practice, satisfaction and patient satisfaction*. The search of the literature resulted in 80 articles. The inclusion criteria were full text, peer-reviewed articles published from 2010 to the present in the English language that involved efficiency strategies and staff and patient satisfaction. Full text papers were reviewed, and studies with information on practice management and lean strategies related to evidence-based practices, and outcomes were assessed. Only studies that included intervention strategies to improve efficiency in the clinic and hospital settings were included. The exclusion criteria were studies that did not focus on an evidence-based practices (EBP) and improving efficiency and customer satisfaction. The references from the articles found were examined for relevance and their relation to practice management, outcomes, and impact on customer satisfaction. After initial screening of titles and abstracts, full-text publications of potentially eligible studies were examined utilizing the snowball approach.

Thirty-two studies were reviewed and after abstracts were identified to be relevant to the project objective, fifteen studies met the inclusion criteria.

In the past several years there has been an increased focus on implementing lean processes, which minimize non-value-added activities from a process and maximize customer value. Healthcare agencies have begun modeling lean processes such as the Toyota Production Systems model in the healthcare setting to improve efficiency, decrease waste, decrease costs and improve health outcomes (Olive & Brown, 2009). The evidence has proven that implementing lean processes in the healthcare setting does improve satisfaction of staff and customers. Lean processes also improve efficiency and decrease operating costs due to the implementation of evidence-based practices. According to the evidence, implementing evidence-based lean strategies can effectively reduce wait times and improve customer satisfaction (Olive & Brown, 2009; Simons, et al., 2017). Researchers seek to identify the most effective methods for increasing productivity, decreasing health care costs, improving quality, and improving satisfaction among staff and customers. Lean is a method for process improvement and can be applied to any process (McManus, 2013). Combining specific lean interventions with an organizational improvement approach improved waiting times, patient safety, employee satisfaction, and absenteeism in the short term (Simons, et al., 2017). Lean process interventions lead to shortened wait times, more value-added visit time, improved quality and standardized processes (Best et al., 2016; Agarwal et al., 2016; Balushi, et al., 2014).

According to the authors D'Andreamatteo, Lanni, Lega & Sargiacomo (2015) and Halvorosn, et al., (2016) agencies must identify standard patient flow for clinic

encounters, improve patient access and provider productivity. The drive for perfection requires strong leadership, pervasive training, and persistence over time (Rossum, Aij, Simons, Van Der, & TenHave, 2016). Research has shown that standardizing processes and simplifying systems to self-regulate without additional management support is vital to eliminating system wastes (McManus, 2013). Having strong daily management systems, such as self-organizing teams and organizing supplies to make them more accessible and time efficient will help to make the well-child visit include more value-added time. The Institute for Healthcare Improvement (IHI) (2016) defines value-added time as the time the patient spends with the healthcare provider or members of the healthcare team. Nonvalue-added time is the time the patient spends waiting (IHI, 2016). Standardizing common procedures by creating checklists help improve quality of care and improve outcomes. Value added steps could add or transform knowledge or reduce uncertainty in diagnosis and testing (McManus, 2013). Wastes require excess work, extra capacity, more time and increased costs to deliver product (McManus, 2013). The clinic flow analysis (CFA) can help identify system wastes. Completing a CFA can help staff to identify best practices to improve clinic flow. It's important to standardize, stabilize, and to smooth workflow to make poorly-performing processes apparent so that processes can be changed to become more efficient (Hennessey & Frye, 2016; Lawal, et al., 2014; Best, et al., 2016).

Another important aspect of implementing PM is the organizational culture and how receptive the staff are to the new process changes (IHI, 2016). Hennessey & Frye (2016) implemented practice development strategies and best practices to improve the culture of safety and patient and staff satisfaction. The results included an 80% reduction

in patient complaints, a 62% reduction in pressure ulcers, a 10% reduction in nursing sick leave and a 13% improvement in the post-nursing workplace satisfaction survey. Best et. al, (2016) use systems dynamics mapping process to transform clinic processes and achieve sustainable culture change and were successful in changing old clinic processes and improving satisfaction with patients and staff. Best, et al., (2016) reported key themes in all 11 clinical sites: engaged leadership is vital to systems change, improves system level changes, improves staff and patient experiences of care, improves efficiencies, and decreases costs. The authors concluded that systems thinking is vital to sustainability of culture change to improve satisfaction and outcomes (Best, et al., 2016; Hennessey & Frye, 2016). Nattabi, Gudka, Ward, & Rumbold, (2016), concluded that implementing quality improvement strategies would lead to improved satisfaction among staff and patients and outcomes would be improved.

Willis, et al., (2010) identified six guiding principles to engage agencies in culture change and to make the changes sustainable. The principles were to “align vision and action; make incremental changes within a comprehensive transformation strategy; foster distributed leadership; promote staff engagement; create collaborative relationships; and continuously assess and learn from change” (Willis, et al., 2010, p. 2). These principles yield positive changes and can be interpreted and adapted in the contexts of other local health settings. The study found that if the six guiding principles are implemented effectively, then the culture change will most likely be sustainable. The authors concluded that implementing lean thinking led to time-savings and timelines of service, cost reduction, increased productivity, reduction in errors, improved staff and patient satisfaction and decreased mortality (Mazzocato, Savage, Brommels, Aronsson, & Thor,

2010; Willis, et al., 2010). One of the most important things to remember to achieve sustainability of your project goals is to have a change in organizational culture to one that is supportive of change and open to new practices (IHI, 2016).

Gaps in Literature

There are many gaps in the literature around PM and lean interventions in the health department setting. The majority of the studies reviewed were based in the hospital setting and not in health departments. Health departments function much differently than hospitals, and there is a gap in research on lean management in the LHD setting. Best, et al., (2016) states that only a sample of initiatives was selected; it was not intended to compare and contrast facilitators and barriers across all initiatives and regions. Additional research is needed to compare and contrast barriers and facilitators across these lean initiatives and across different healthcare settings.

Other limitations of this review were the lack of high quality evidence of the intervention strategies aimed at improving clinic efficiency and decreasing costs. The “role of an organization's culture is important to safe healthcare practices and serves as a forerunner to other innovations” (Vest & Gamm, 2009). A review of applications to organizations revealed that “innovation frequently faces an adverse culture, and managers incorrectly assumed employees would automatically adhere to the new philosophy” (Vest & Gamm, 2009). Specifically speaking about healthcare, Kovner and Rundall (2006) stated that “efforts to introduce evidence-based decision making quickly wither and fade away because the organizational culture does not support evidence-based management” (p.7).

Lacking in the articles reviewed “is the extent to which such transformations are sustainable, and the extent to which the knowledge, attitudes, and skills developed from the transformation are retained and transferred to other problems and parts of the healthcare organization” (Vest & Gamm, 2009). In order to have sustainable change there must be a shift in the agency culture. More research is needed to identify strategies to support the changes made during this project and similar projects to be sustainable and how to extend the changes to other areas within the organization. Further research is warranted in the clinic setting to decrease inefficiencies, increase patient satisfaction and decrease costs related to these inefficiencies.

Furthermore, the studies did not evaluate the organizational cultural acceptability of the practice management interventions and mindset that comes with it. This is an important aspect in sustainable implementation of these practices in the clinic setting. More research is needed to evaluate the effectiveness of implementing lean process and changing the culture in the clinic setting so that new interventions and evidence-based practices are sustainable.

Theoretical Framework

Lewin’s Theory of Change guides this project. Kurt Lewin’s Change Theory of Nursing includes a three-stage model of change that identifies unfreezing, change and refreezing model that requires prior learning to be rejected and replaced (Shirey, 2013). Lewin's Change theory is emphasized in nursing literature as a framework to transform health care (Shirey, 2013). The theory offers a clear, easy to understand perspective for evidence-based practice and holistic nursing care. Experts assert that Lewin's

theory “provides the fundamental principles for change, and in conjunction with the lean system can also provide the elements to develop and implement change, including accountability, communication, employee engagement, and transparency” (Shirey, 2013, p.69). This theory fits with the DNP project *Implementing Practice Management Strategies in a Local Health Department*.

The interventions for the project were based on Lewin’s Change Theory which lays out a framework to promote change. This framework will be utilized in planning interventions to promote behavior change in the local health department providers and staff. New evidence-based practices were used to encourage staff to let go of old practices that are not evidence-based and are counterproductive. Strategies to promote behavior change in this project will include:

1. training on PM and PDSA,
reminder systems, review and feedback,
2. clinic flow assessment and;
3. addressing perceived barriers to the implementation and success of the project

The project is the first step in the process of changing outdated practices of local health department to include adherence to evidence-based recommendations. The successful implementation of the project aspires to have a long-lasting impact on attention to evidence-based principles and processes to improve health outcomes for children (Best, et al., 2016).

Lewin’s Change Theory has three major concepts: driving forces, restraining forces, and equilibrium (Cummings, Bridgman & Brown, 2016). Driving forces are

those that push in a direction that causes change to occur (Petiprin, 2016). They facilitate change because they push the staff in a desired direction (Petiprin, 2016). They cause a shift in the equilibrium towards change (Petiprin, 2016). The driving forces for the project were the management team being supportive of the project and encouraging staff to participate. Restraining forces are those forces that counteract the driving forces (Petiprin, 2016). These forces push the staff in the opposite direction and hinder change. They cause a shift in the equilibrium that opposes change (Petiprin, 2016). In the project resistance to change was a major restraining force that had to be overcome. The staff were resistant to the new best practices that were shared. Equilibrium is a “state of being where driving forces equal restraining forces, and no change occurs” (Petiprin, 2016). When changes occur between the driving and restraining forces the equilibrium will be raised or lowered (Cummings, Bridgman & Brown, 2016).

There are three stages in this theory: unfreezing, change, and refreezing.

Unfreezing is the process which “involves finding a method of making it possible for people to let go of an old pattern that was counterproductive” (Petiprin, 2016). It is important to overcome the strains of individual resistance. There are three methods that can lead to the achievement of unfreezing. The first is to increase the driving forces that direct behavior away from the current counterproductive practices (Petiprin, 2016). The next method is decreasing the restraining forces that negatively affect the movement from the existing equilibrium (Petiprin, 2016). The third method is utilizing a combination of the first two methods (Petiprin, 2016). This PM project will be a combination of both methods. The first step of the project will include a clinic flow analysis that will focus on identifying wastes in the system so that strategies can be developed to eliminate system

wastes. The goal is to have a lean, efficient and more productive clinic flow model. Management support of the project is of utmost importance because management is the driving force behind the wanted culture change. The change stage, which is also called "moving to a new level, involves a process of change in thoughts, feeling, behavior, or all three, that is in some way more liberating or more productive" (Petiprin, 2016). In the project, the change stage is where it is vital to involve the ground level staff as well as management so that everyone feels valued, respected and like their input matters. Educating and assessing staff is of utmost importance to ensure they value the project and are more willing to participate. Involving ground level staff in the planning will promote staff to be invested in the project and will decrease resistance to the changes. Ground level staff were included in the project by allowing them to participate in the discussions and brainstorming sessions to identify evidence-based strategies to implement. They were educated on the process. Education is of utmost importance to ensure staff are understanding the new evidence-based practices and are using their critical thinking skills and not relying on old practices.

The refreezing stage is establishing the change so that it is sustainable (Petiprin, 2016). Without this final stage, it can be easy for the patient or staff to go back to old habits (Cummings, Bridgman & Brown, 2016). The refreezing stage will be implementing policies and practices that are evidence-based. Providing continuing education around EBPs are important to achieve sustainability. It's important to establish quality improvement processes so that the changes are monitored, and staff doesn't go back to non-evidence-based practices. Processes also need to be put in place to keep the staff current on new research and EBP. Some strategies that can promote keeping staff

current is to have subscriptions to medical journals that are pertinent to the clinic setting and offering continuing education opportunities. Staff satisfaction surveys are important in measuring satisfaction and to develop strategies to increase satisfaction from feedback from the staff.

Barriers

There are barriers that may impact the implementation of the DNP project. These barriers include staff resistance to change, staff attitudes, staff perceptions, budget constraints and the short timeframe for implementation. Staff are often stuck in their old ways and hard to convince to change, even when there is evidence and guidelines to show them. Lewin's Theory of Change will help to guide the project and help to decrease staff resistance to change and improve staff attitudes. The manager was educated about the project and benefits of implementing the project and could give feedback and input into the process. An important thing to remember is that a good manager will include the ground level staff when planning changes. It's of utmost importance to have them feel they are part of the process so that you get staff buy-in. If the staff feels they are valued as employees, then they will be less resistant to change and have better attitudes. An agency should encourage engagement of staff and should distribute leadership. Managers should assess and learn from change on a regular basis (Willis, et., al, 2016). The manager should include them in the planning and PDSA cycles teams, so they feel like they are part of the process. This will help to lessen those barriers.

Lewin's Theory of Change fits perfectly with the DNP project and will inform the project activities and processes. With the need to streamline resources and provide

quality and safe healthcare, nurse leaders need to focus on a rapid cycle approach like the PDSA framework to lead and sustain quality improvement changes in the clinic. Strong leadership is vital to the success of the project. The leaders will be the driving force behind the changes. Collaboration enhances nursing buy-in to this process and gives staff a better understanding of the application of lean principles and Lewin's theory. In utilizing this theory, the project aim is to make changes that are evidence-based and sustainable.

CHAPTER 3: METHODOLOGY

Project Design

The project aim is to improve efficiency and the patient throughput, in the setting of a well-child clinic, by using the impact of lean processes implementation (Agarwal, et al., 2016). The project design was an evaluation of prospective interventions that were identified from a clinical flow analysis (CFA). The purpose of the CFA was to follow a minimum of 3 well-child visit from arrival to the agency to check out. The time it took at each patient check-in point was recorded using the IHI Detailed Patient Cycle Time form. This form is used to collect the actual time the patient spends at each step in the clinic process from registration, nurse check-in, laboratory, provider, immunization and check out. The project collected data on five well child visits utilizing the clinic flow analysis process pre and post intervention. According to data collection plan, data has collected from check-in at registration until check out for every single patient. The collected data was analyzed using lean tools, decision making and problem-solving tools from the IHI. Value Stream maps (VSM) were done to map out the amount of value-added and non-value-added time a patient encounters during a visit. The University of North Carolina at Charlotte Institutional Review Board approved this doctoral scholarly project.

Participants

Multidisciplinary staff were involved in the project. These staff included: nursing staff, clerical staff, billing staff, laboratory staff, management and providers. All staff and patients gave written consent before participating in this scholarly project. Children 0-21 years of age receiving well-child care in the LHD clinic were followed through the clinic flow process. Ten children that ranged from birth to ten years of age were observed

moving through the clinic process. Five of these ten children were observed pre-intervention and five were observed post intervention.

Setting

This DNP project took place in a local health department well-child clinic in a rural county in North Carolina. The child health clinic serves children 0-21 for well-child care. The current child health clinic has excessive wait time of over 2 hours and decreased customer satisfaction rates (Garrett, 2017). The child health clinic operates Monday through Friday on an open access schedule. The clinic sees an average of 39-44 child health patients a month for well and sick care (Deaton, 2018).

Tools and Measures

The time study data was collected utilizing the Detailed Clinic Cycle Time (see appendix A) on an interval measurement scale. The Detailed Clinic Cycle Time forms were created by the Institute for Health Care Improvement (2014) and is an evidence-based efficiency tool. The customer satisfaction survey was adapted from the Institute of Healthcare Improvement (2017) sample survey and have good reliability and validity. The customer satisfaction surveys (see appendix B) data were collected on the ordinal scale. It contained twelve questions that were patient centered and the patient filled them out at the end of the visit. The survey did not contain and patient or demographic information. The main question related to this project was the wait time and the satisfaction with services. The customer rated the visit as not satisfied, neutral, satisfied to very satisfied. Customer satisfaction surveys are essential sources of information for identifying gaps and developing an effective action plan for quality improvement in healthcare organizations (Al-Abri & Al-Balushi, 2014).

Another tool that was utilized was the PDSA cycle (See appendix C). The PDSA is a framework for testing change by planning it, trying it, observing the results, and acting on what is learned (IHI, 2013). This is the scientific method, used for action-oriented learning (IHI, 2013). In the plan phase the PM team developed a plan for the identified issues and identified possible barriers to implementation. The Do phase was the actual implementation of the plan and the study phase was where the team discussed and reviewed the progress towards the plan. The final phase is the Act phase, and this is when the team puts the new plan in place and new evidence-based practices. PDSA cycles offer a supporting mechanism for iterative development and scientific testing of improvements in complex healthcare systems (Taylor, et al., 2013).

Intervention

Approval from the University of North Carolina at Charlotte Institutional Review Board (IRB) was obtained in August 2017. An initial meeting was held with the health department leadership, and they were educated on the project processes and goals (see implementation diagram, Table 1). A multidisciplinary PM team was formed that lead the PM process. The director of nursing appointed the staff that would work on the project team. According to the Health Service and Resource Administration (2016), the PDSA cycle is “shorthand for *testing a change* - by planning it, trying it, observing the results, and acting on what is learned.” This framework guided the progress of this plan and helped to make it sustainable.

The purpose of the initial PM team meeting included:

- Beginning a Plan, Do, Study, Act (PDSA) cycle.

- Reviewing customer satisfaction surveys.
- Educating staff on the detailed clinic cycle time study forms and process.
- Educating staff on the strategies of the scholarly project.
- Brainstorming sessions with staff to discuss possible issues in clinic flow.
- Reviewing health department policies/protocol related to quality improvement processes and evidence-based practices.

Following this initial meeting, the PM team distributed the customer satisfaction surveys and collected data for one week. The customer satisfaction survey consisted of twelve questions rating the visit not satisfied, neutral, satisfied, very satisfied, and had a specific question on wait time. The DNP project coordinator completed the clinical flow analysis(CFA) and followed five children through a well-child visit from check-in to check out. The Detailed Clinic Cycle time form was utilized to collect the data on time at each step of the clinic process. This was done prior to the implementation of the new evidence-based practices. Several issues were identified in the clinic flow processes. These issues serve as barriers and system wastes, which lead to inefficiencies. After the CFA was completed, the project coordinator analyzed the results of the CFA and identified evidence-based practices as potential solutions to the identified issues.

Two weeks after the CFA was completed and the initial pre-project time studies and customer satisfaction surveys were collected and reviewed a second PM team meeting occurred. At this meeting, the PDSA cycle was developed, and the group brainstormed ideas to improve efficiency in the clinic flow. The issues that were identified in the CFA were:

- The patient had to wait in five different areas during the visit. They were moved from the lobby, to the nurse waiting room, to the nurse intake room, to the laboratory and finally to the exam room. There were extended wait times for the patients in the nurse waiting room and the exam room.
- The rooms were not fully stocked with needed items and forms.
- The Health Check Program Guide 2017 has several required components that are different for each age group and the nurses and clerical staff found this confusing to know what components and what forms go with each age group.
- The exam rooms and intake rooms are small and confining. The patients had to wait 20-40 minutes for immunizations after the exam was completed.
- There is no morning meeting to guide the day and update staff on changes, such as staff being sick, or being short a provider.
- There is only one well-child intake room, which means if there is a second appointment behind them they have to wait for the intake room to open up.

The PM team agreed with the identified issues and came up with potential solutions to these issues. These included:

- The first potential solution included having the infants from 0-2 years of age go directly to the intake room after registration was completed and having the rest of the visit take place in that one room. The intake nurse, laboratory staff, and immunization nurse will all come to the patient, rather than have the patient move from station to station
- The room were stocked to include a scale and height measurement table.

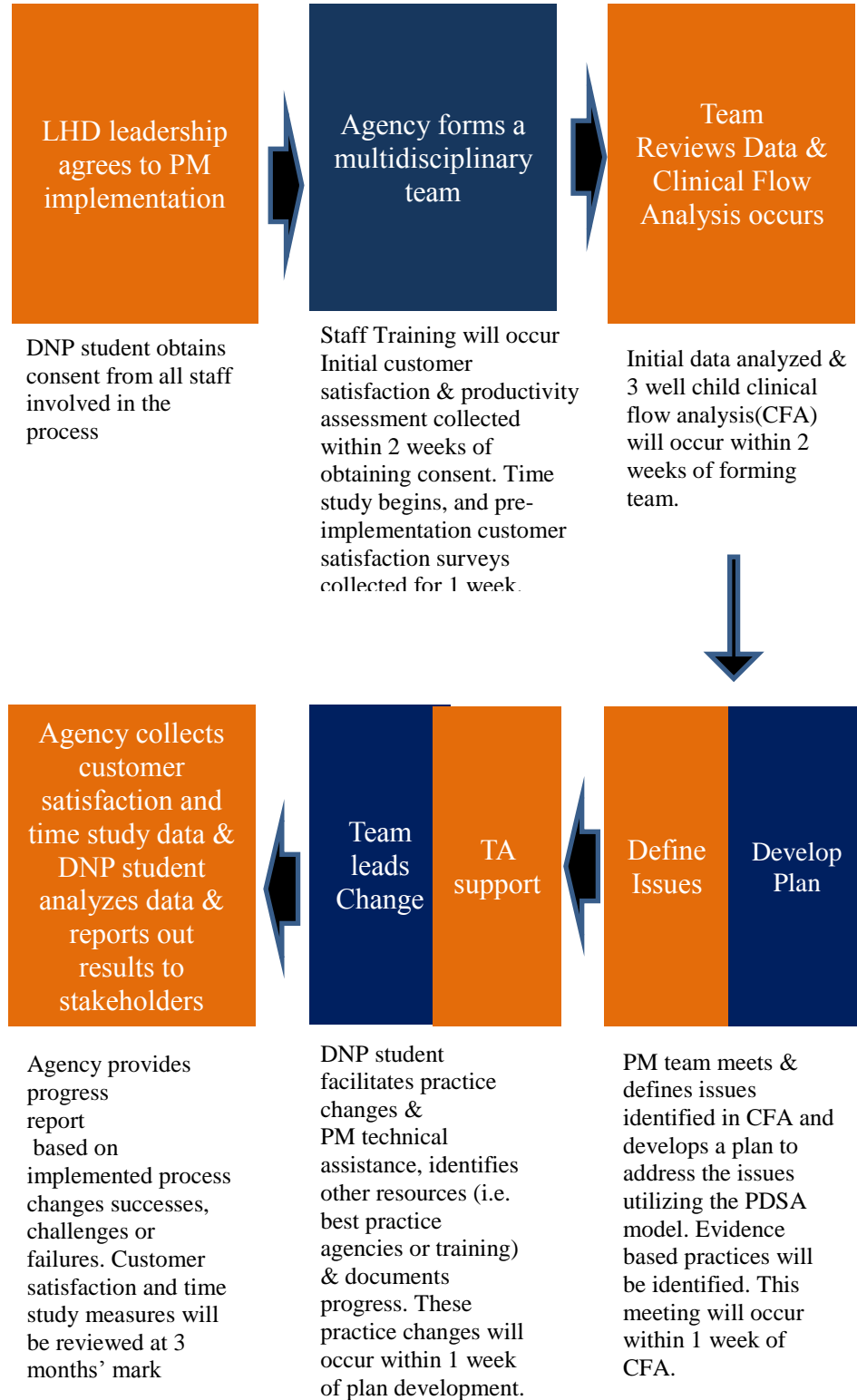
- The next potential solution was to develop checklists for the clerical staff and one for the clinical staff that would identify the required visit forms and components for each age group. The staff could utilize these forms to ensure all visit requirements are met.
- An education session was held with the child health coordinator and supervisor utilizing the well-child audit tool that reviews the components of a well-child visit.
- The outdated longer initial patient history form was replaced with a shortened state approved version.
- The staff agreed to a morning huddle and/or email that discussed the flow of each day and would identify issues such as overbooked schedules or sick staff. The supervisor was responsible for sending out a morning email to all staff at beginning of their shift.

The agency was given four weeks to implement these changes. A follow-up meeting was done to ensure that the agency was moving forward with the plan. Progress towards the project goals was assessed at this meeting and barriers to the project were discussed. At the end of the three-month implementation timeframe the agency administered the customer satisfaction surveys again and started another clinical flow analysis was completed. The PM team provided progress reports to the DNP Project coordinator based on implemented process changes successes, challenges or failures. Customer satisfaction surveys were collected 3 months post implementation of the interventions and another 5 CFA's were conducted. The project began in September

2017 and ended in December 2017. The DNP project coordinator gathered and analyzed the data and had a meeting to report out to stakeholders.

Table 1

Implementation Plan Diagram



Data Collection

The time study data was collected utilizing the Detailed Clinic Cycle Time (see appendix A) on an interval measurement scale. The time study began one week before the CFA and was completed again at three months after the implementation of the new clinic processes practices. The customer satisfaction survey data was collected on the ordinal scale. The surveys were collected pre-implementation and at three-months post implementation. The DNP project coordinator collected the surveys and time studies and reviewed the data. The independent variable is the clinic processes, and the dependent variable is the agency culture. The project aims to change clinic processes and improve agency culture and customer satisfaction

The data from the satisfaction survey was evaluated utilizing the *t*-test method. The outcomes of the time study were evaluated by utilizing the *t* test analysis. The *t*-test analyses compared the wait time pre- and post-intervention. Interval level data will be used to determine change in wait times. The measurement tools were chosen by the project coordinator and agency staff and are based on evidenced-based research. The pre- and post- surveys and time studies were reviewed for validity and reliability. Once the data has been collected and analyzed the results will be shared with the stakeholders, and the PDSA cycle will continue.

Translation and Impact on Practice

. This project helped to create the structure, skills, and processes to understand clinical services and take data-driven actions to improve patient outcomes (Rocco, et; al, 2014). This project was able to improve clinical processes and improve patient experience of care. Staff satisfaction was also increased with the new processes. It

helped to reduce costs through system waste reduction, decrease visit time, potentially increase the number of children seen and increased customer satisfaction, It also helped to free resources for public health strategies.

Fiscal Impact

One fiscal consideration with this project includes the possibility of the clinic increasing the number of patients seen each day, due to the increased efficiency in clinic flow processes. Seeing more patients will increase the amount of revenue that the clinic generates. This increased revenue could help the clinic to remain sustainable with current Medicaid reform proposed changes and decreased Maternal Child Health Block grant funding. If the clinic converts the rest of the exam rooms to be able to see all patients, there will be a cost to properly stock all the rooms. This project could have a significant positive fiscal impact on this health department clinic.

CHAPTER 4: RESULTS

Project Results

The purpose of this scholarly project was to evaluate the implementation of new evidence-based practices in an LHD Child Health clinic to increase efficiency in clinic processes. Implementation of the new practices helped to decrease wait time and improved customer satisfaction related to wait time. There were 5 well child visits in each pre and post intervention groups for a total of 10 participants. The independent t test was utilized to identify if there was or was not a difference in the visit times between the participants in the pre and post intervention groups. Findings demonstrate that the newly implemented evidence-based practices facilitated a statistically significant decrease in visit time ($p < 0.000$). The mean pre-intervention visit time was 107 minutes, while the mean visit time post-intervention was 72 minutes, with a total overall decrease of 35 minutes post intervention. With this p-value below 0.05, we can reject the null hypothesis which stated that there was a no difference between the pre and post intervention visit times and concludes that there is a real difference in visit time between the two groups. The paired t test was utilized to see if there was a difference in the satisfaction scores of participants in the pre and post intervention groups. The customer satisfaction survey was given to all the participants and the question related to satisfaction with wait time was rated from very satisfied, satisfied, neutral to not satisfied. Findings showed a significant increase in customer satisfaction related to visit time ($p < 0.000171$) in parents that had children who received a child health preventive visit post intervention. With this p-value below 0.05, we can reject the null hypothesis and accept the alternate hypothesis. The alternate hypothesis stated that there was a positive

difference between the pre and post-intervention customer satisfaction scores. Customers were more satisfied post-intervention with the visit wait times.

Discussion of Results

The anticipated result was to demonstrate an increase in customer satisfaction with a decrease in the time it takes for the patient to complete a well child visit. The findings of this scholarly project were statistically significant in showing the post-intervention group were more satisfied with wait time. There was also a decrease in the amount of time it took to complete the visit. The implementation of the new clinic processes allowed the patient to complete the visit in one room instead of being shuffled from room to room for each step of the process. The clinic staff collected the lab work and brought the immunizations to the patient. This helped to decrease the amount of nonvalue-added time for the patient. By decreasing non-value-added time the patients reported better experiences of the care they received. Having efficient evidence-based clinic flow processes, positively affects the patients experience of care and leads to more satisfaction with the visit. Discussions with clinic staff revealed that utilizing evidence-based practices increased their satisfaction with the clinic flow.

The observations that were made during the CFA were critically analyzed and the team worked together to identify evidence-based solutions to the issues. One goal was to decrease the amount of time it took to complete the visit and to decrease the amount of waiting rooms a patient had to wait in. The team session led to several solutions, first being they removed and outdated history form that was two pages long and replaced it with the up to date one-page history form. This cut down on the amount of time it took the patient to fill out the form and for the nurse and provider to review it. During the

CFA it was identified that the patient had to wait in five different areas during the visit. The patients were moved from the lobby, to the nurse waiting room, to the nurse intake room, to the laboratory and finally to the exam room. Extended wait times were noted for the patients in the nurse waiting room and the exam room. The decision was made to move the patient from the initial waiting room to the exam room to cut the total rooms down to two instead of five rooms. Halvorosn, et al., (2016) state that agencies should identify standard patient flow for clinic encounters, and this will help to improve patient experiences and will increase productivity.

Lessons learned in the project included that taking some simple steps can make significant changes to the well child clinic process. It can potentially lead to increased number of client visits, which will lead to increased revenue for the clinic. With shrinking public health resources and funding health departments must find ways to decrease costs and improve efficiencies. This project identified strategies to cut costs and become more cost effective. The project helped to identify issues in the clinic flow and to develop evidence-based solutions utilizing the PDSA approach. The PDSA approach helped to keep the project on track and to develop an alternate plan when needed. The overall results of the project showed that implementing these new evidence-based practices helped to increase patient satisfaction with wait time and decreased the visit time by 35 minutes. By increasing efficiencies this led to decreasing the amount of time it takes to complete a visit. This can potentially open more appointment times and help to increase access to care in their community. This project can be utilized to guide other projects in other clinics at the health department, such as the family planning, STD and maternal health programs.

CHAPTER 5: PROJECT SIGNIFICANCE

The evidence-based practices implemented by the child health staff at the LHD showed significantly lower visit times by an average of 35 minutes less than pre-implementation of the new evidence-based practices. The doctoral scholarly project augments the limited literature that has been published to date on the lean process strategies in the local health department setting. Findings of the project included evidence of improvement in customer satisfaction. The PDSA cycle and Lewin's theory of Change and the doctoral scholarly project support the transition from non-evidence-based practices to practices that are evidence-based. Managers in the health department setting have a duty to understand the importance of working more efficiently and cost-effectively to sustain current clinical services. The project demonstrated that managers can benefit from evidence-based practices.

Sustainability

This doctoral scholarly project offers health department avenues to implement evidence-based practices that are more profitable and efficient. With the decreased funding that the health departments are facing, renewed emphasis on flow, processes and effectiveness will be needed to deliver services in a cost-effective manner. If the agency can operate more cost effectively than the services will be more sustainable.

Recommendations

Findings of the project support the recommendation that health department should review their current practices and question older, non-evidence-based practices. The implementation of evidence-based practices helps to deliver care to patients in a more productive manner that will help to achieve better outcomes. The recommendation for

Child Health care providers to implement evidence-based practices can be extended to other well child care providers. A next step could be to review other health department clinics with a CFA and utilize the PDSA to develop a plan to improve the clinic flow in other areas, such as family planning, sexually transmitted disease or maternal health clinic.

Study Limitations

This project had several limitations. This project was conducted at a single well child visit site at a specific geographical location. Findings may not be able to be generalized in other practice settings as there may be bias present. It is possible that the staff during the CFA were aware of the process while they were being observed and worked more efficiently. The study was limited by resistance from the staff to implement the suggested interventions. The recommendation of decreasing the amount of waiting/exam rooms a patient had to wait in was limited to children birth to two years of age. It would have been beneficial to see the amount of waiting areas decreased for all patient's birth to twenty-one years of age.

In addition, the CFA sample size was small and as a result sampling bias may be present. However, to strengthen the validity of the study, random observations were conducted. Future research should be conducted on lean process implementation in the local health department setting and needs of patients of different ethnic, educational, and sociodemographic backgrounds to determine the most effective approach to improving patient experiences of care.

Conclusion

The practice development methodology brought about significant workplace cultural transformation that improved care practices, reduced costs and enhanced staff satisfaction (Hennessey & Fry, 2016). This project facilitated teamwork among clinic staff and promoted the importance of utilizing evidence-based practices. Lean processes and evidence-based practices can promote improvement in service quality, consistency and will be more cost- effective and sustainable. It promotes standardization of care and leads to time-savings, cost reduction, increased productivity, reduction in errors, improved staff and patient satisfaction and decreased mortality (Mazzocato, Savage, Brommels, Aronsson, & Thor, 2010; Willis, et al., 2010). “Research has shown that if healthcare agencies diligently use the best clinical evidence and expertise, and ensure treatments are consistent with patient values, they will achieve better outcomes in every way” (Haughom, n.d.). Better outcomes lead to lower costs to provide care.

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Appendix A

Institute for Healthcare Improvement: PDSA Worksheet

Objective:



1. Plan: Plan the test, including a plan for collecting data.

Questions and predictions:

- ---

- ---

Who, what, where, when:

Plan for collecting data:



2. Do: Run the test on a small scale.

Describe what happened. What data did you collect? What observations did you make?

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QI ESSENTIALS TOOLKIT: PDSA Worksheet



3. Study: Analyze the results and compare them to your predictions.

Summarize and reflect on what you learned:



4. Act: Based on what you learned from the test, make a plan for your next step.

Determine what modifications you should make — adapt, adopt, or abandon:
