IMPLEMENTATION OF PRENATAL SERVICES IN A RURAL SETTING

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The Supervisory Committee certifies that this ***disquisition*** complies with North Dakota State University's regulations and meets the accepted standards for the degree of

DOCTOR OF NURSING PRACTICE

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ABSTRACT

Adequate prenatal care is an essential component of optimizing outcomes for both mother and baby. Prenatal care in rural areas is not always as easily accessible as compared to urban areas. Due to several smaller hospitals across the United States either closing completely or discontinuing their labor and delivery services, there has been an increased focus on the health disparity of rural women pertaining to prenatal care. Rural communities lack specialty providers, and rely on family practice providers to deliver necessary health care to patients of all ages.

This practice improvement project (PIP) focused on implementing evidence-based guidelines for prenatal care in a rural Minnesota community. Through implementation of the PIP, rural family practice providers were educated on evidence-based guidelines for prenatal care, as well as certain conditions that the Obstetrics and Gynecology department would manage in an urban setting. Another aspect of the PIP was to develop relationships with the closest hospitals that have the capability of delivering babies, in which the patients of the rural clinic would be referred to for delivery. Demographics and patient preferences are factors affecting where a patient chooses to deliver.

Project implementation was comprised of educational sessions which included nursing staff and the medical staff, as well as networking with the three other hospitals involved that have the capability of delivering babies. To assess the effectiveness of the PIP implementation, education completion rates, referral processes, and patient visits were tracked.

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There are always countless individuals without whom a project like this may never be successful. It is my wish that everyone who was involved in the many stages of this project know that they have my overwhelming thanks and appreciation for all they have done.

DEDICATION

I would like to dedicate the completion of this project to my amazing family, for their endless support and confidence in me. A special thank you to my husband Paul, and my children Sullivan and Scout, for being patient and supportive of me throughout my graduate studies. Lastly, I would like to thank my parents, who no matter what crazy idea I have come up with, they have always supported me along the way. With my family by my side, I know there is no challenge that is too grand to accomplish.

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LIST OF ABBREVIATIONS

PIP .....Practice Improvement Project

OBGYN .....Obstetrics & Gynecology

RHC .....Rural Health Clinic

APC.....Advanced Practice Clinician

NICU.....Neonatal Intensive Care Unit

ACOG .....American College of Obstetrics & Gynecology

USPSTF .....United States Preventative Services Task Force

IHI.....Institute for Health Improvement

PDSA .....Plan-Do-Study-Act

LPN.....Licensed Practical Nurse

RN.....Registered Nurse

EMR.....Electronic Medical Record

CPT .....Current Procedural Terminology

IRB.....Institutional Review Board

APRN.....Advanced Practice Registered Nurse

DNP .....Doctor of Nursing Practice

CHAPTER ONE. INTRODUCTION

Background and Significance

In the rural setting, access to healthcare is important to meet the needs of patients across the lifespan, including childbearing-age and pregnant women. Having accessible, structured, evidence-based prenatal programs in rural settings is necessary for rural women to receive adequate care before, during, and after pregnancy. Adequate prenatal care is integral in achieving optimal outcomes for mothers and newborns. However, according to a study from the University of Minnesota, declining access to maternity care in rural areas across the United States has led to poor health outcomes for mothers and babies (Pross, 2018). For example, lack of prenatal care has been associated with preterm labor and delivery, low birthweight babies, and even perinatal mortality (Abu-Ghanem et al., 2012).

Typically, women in developed countries have seven to twelve prenatal visits (Zolotor & Carlough, 2014). In addition, the American College of Obstetricians and Gynecologists (ACOG), which is a national organization dedicated to the advancement of women's health recommends that women who have uncomplicated pregnancies have prenatal visits once every 4 weeks for the first 28 weeks, every 2-3 weeks between 28-36 weeks, and every week from 36 weeks until delivery (Epocrates, 2018). However, to follow these recommendations a woman must have access to prenatal care. Yet, the number of rural health care facilities in the United States providing obstetric care has decreased so much over the past two decades that over 28 million women of reproductive age (18-44 years) who reside in rural communities lack adequate access to prenatal care (Hung, Kozhimannil, Casey, & Moscovice, 2016).

Access to care is one of the goals of Healthy People 2020 (2018). Healthy People provides science-based, 10-year national objectives to improve the health of all Americans.

Because of this tradition, Healthy People 2020 was launched in 2010 with an ambitious agenda for improving the health of Americans. Within the Healthy People national goals is a category aimed particularly at improving maternal, infant and child health. According to Healthy People 2020 (2018), Maternal, Infant, and Child Health (MICH) 10.2 has a specific goal which is: Increase the proportion of pregnant women who receive early and adequate prenatal care (Maternal, Infant, Child Health section, para.1). When looking into the specifics of MICH-10, the rates of first trimester prenatal care compared women living in urban areas to women living in rural areas, and found a higher compliance rate with first trimester prenatal care for women residing in urban locations (Healthy People 2020, 2018)

As stated above, the primary objective of Healthy People 2020 (2018) is to impact local healthcare access. However, Hung et al. (2016) reported that among 27 rural hospitals that stopped providing obstetric services, the most frequently cited reasons were low volumes of deliveries in the hospital, difficulties staffing obstetric units, and financial vulnerabilities due to high proportions of patients on Medicaid. In addition, access is also impacted by the increased mergers of professionals and rural medical institutions into larger corporate systems and networks, which has resulted in fewer physicians practicing at rural sites (Ricketts, 2000). Overall, the obstacles faced by both patients and health care providers in rural communities differ greatly from those faced by providers in urban communities. Economic factors, cultural and social differences, lack of recognition by legislators, and the isolation of remote living all combine to create health care disparities, inhibiting rural Americans in their struggles to live normal, healthy lives (National Rural Health Association, 2018).

Rural populations are on average poorer, less likely to be insured, and less educated than urban populations (Epstein, Grant, Schiff, & Kasehagen, 2009). In addition, rural women are

also more likely to be younger, unmarried, and experience unintended pregnancies (Epstein et al., 2009). Like urban women, rural pregnant women are often referred to Obstetrics/Gynecology (OBGYN) for the management of their prenatal care, the delivery of their babies, postpartum follow up, and lactation counseling. However, due to the distances required to seek care with OBGYN, pregnant women who live in rural and underserved areas often skip appointments, resulting in little or no prenatal care.

In recognition of the issues rural residents face, the Rural Health Clinic Services Act of 1977 was enacted to address an inadequate supply of physicians' service to Medicare patients in rural areas and to increase the use of Advanced Practice Clinicians (APC) in rural areas (CMS, 2018). There is a financial benefit for Rural Health Clinics (RHC) as they are reimbursed at an all-inclusive rate for medically necessary primary health services and qualified preventative health services furnished by a provider at the RHC (Center for Medicare & Medicaid Services [CMS], 2018). In order to receive certification as an RHC, the clinic must be located in either a rural or underserved area and must provide services of an APC in the clinic. As of June 2014, there were 87 designated RHC in the state of Minnesota, three of which are located in Norman County (Minnesota Department of Health, 2014). With the presence of primary care clinics in many rural communities, the community could benefit if local family practice providers delivered prenatal care to the patient population, who would not otherwise seek care due to lack of resource availability and the distance required to travel. Table 1 is a snapshot of national rural health at a glance which shows the limitations with access to providers and specialists.

Table 1

National Rural Health Organization (2018)

National Rural Health Snapshot	Rural	Urban
Percentage of population	19.3%	80.7%
Number of physicians per 10,000 people	13.1	31.2
Number of specialists per 100,000 people	30	263
Population aged 65 and older	18%	12%
Average per capita income	$45,482	$53,657
Non-Hispanic white population	69-82%	45%
Adults who describe health status as fair/poor	19.5%	15.6%
Adolescents who smoke	11%	5%
Male life expectancy in years	76.2	74.1
Female life expectancy	81.3	79.7
Percentage of dual-eligible Medicare beneficiaries	30%	70%
Medicare beneficiaries without drug coverage	43%	27%
Percentage covered by Medicaid	16%	13%

As the capability to deliver babies at local rural hospitals declines or becomes nonexistent in certain communities, pregnant women experience increased anxiety related to getting to the hospital in time for the delivery (Pearson, Siebert, Carlson, & Ratner, 2017). Figure 1 correlates planned deliveries at local hospitals in rural Minnesota to the mother's anxiety level.

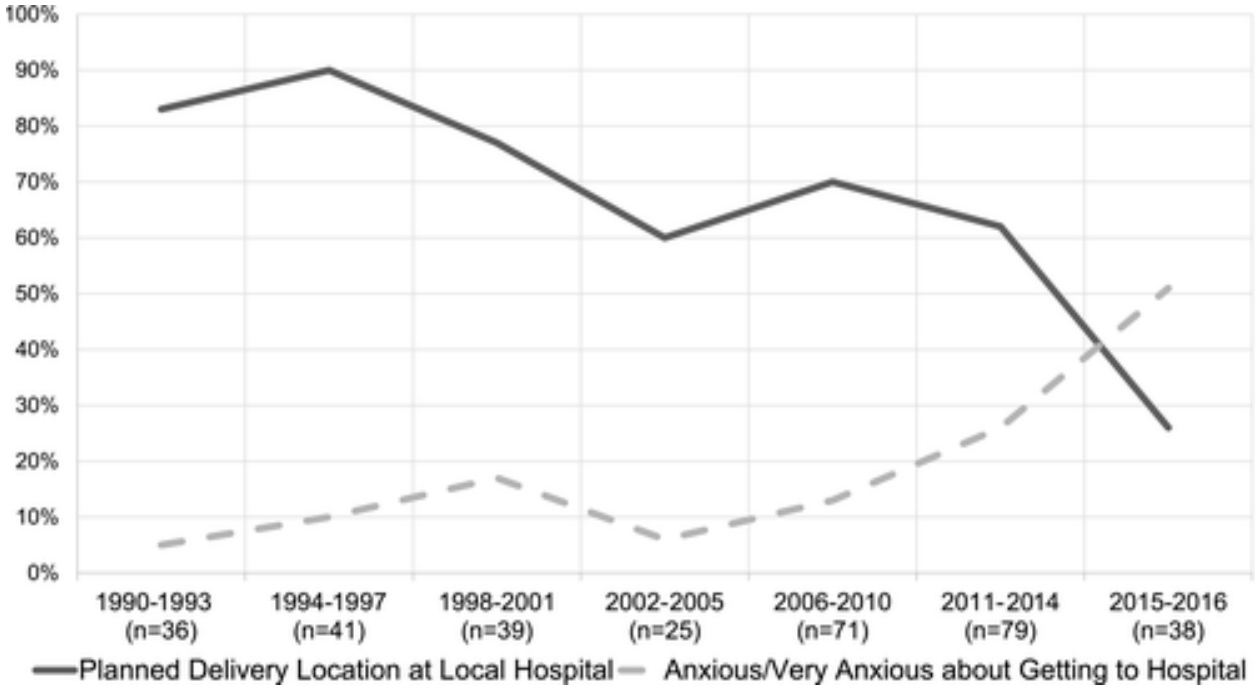

Figure 1. Patient perspectives of loss of prenatal services in rural Minnesota (Pearson et al., 2017).

The history of prenatal services at Essentia Health in Ada dates back decades to a time when the attached critical access hospital performed deliveries, and continuum of care throughout pregnancy was available at the rural facility. As medical staff changed and the hospital building was lost to a flood in 1997, it was forced to operate out of a temporary site which was not equipped for deliveries or inpatient beds, subsequently the capacity to deliver babies in Ada no longer existed (W. Visser, personal communication, December 2017). Like many rural healthcare systems, the independently owned clinic and hospital in Ada became integrated with a larger healthcare system called Benedictine Health Systems, and later Essentia Health. The city of Ada still owns the current hospital building as it was built with Federal Emergency Management Agency (FEMA) money obtained from the flood of 1997.The current hospital and clinic were built new and opened for operation in the spring of 2000 (E. Stoltman, personal communication, November 2017).

Besides the flood, retired family practice physicians who delivered babies were replaced with APCs who did not. As the rural hospital no longer had the capability to preform deliveries, women residing in the community began going to surrounding hospitals in larger cities for this service. Although there is not a labor and delivery unit located in Ada, there are three Essentia facilities that deliver babies within 62 miles or less from the city of Ada. The closest labor and delivery unit is located in Fargo, North Dakota, which is 50 miles from Ada. The closest Essentia Health labor and delivery units located in Minnesota are Fosston and Detroit Lakes, which are 56.8 miles and 62 miles from Ada, respectively.

With the cost of healthcare steadily rising, there is an increased focus on providing cost-effective prenatal care without sacrificing the quality of the care delivered (Omar & Schiffman, 2000). Prenatal care is included in the Minnesota Medicaid expansion which has improved infant health and decreased infant mortality rates in those states who were included in the expansion (Chintan & Consuelo, 2018). Despite a slight decrease in late or inadequate prenatal care as previously cited, as part of the Medicaid expansion in the state of Minnesota, there was a 39% decrease in the number of residents that were uninsured from 2013-2015 (Norris, 2016).

Easily accessible prenatal care in a rural setting could have positive health outcomes for both the mother and the baby. Kids Count Data Center (2018) revealed an increase in late or inadequate prenatal care for residents of Norman County, Minnesota from 2006-2010 from 4.1% in 2006 to 7.1% in 2010. Improved access to prenatal care in the rural setting, which is this project's aim could increase prenatal visit compliance, enhance prenatal education, and consequently, increase the overall health of the mother and babies during pregnancy, birth and postpartum (Daw & Sommers, 2018).

Currently the RHC has one APC and one family practice physician that will see pregnant females for certain visits during pregnancy. Although the APC will see the pregnant females, there were no formal prenatal care guidelines, nor has any of the nursing staff had any education on best practices in prenatal care. Furthermore, the RHC had never offered any lactation support services which has proven to be beneficial to both mother and baby. In an effort to promote lactation education, the World Health Organization launched the Baby-friendly Hospital Initiative in 1991. The purpose of this initiative is to increase the global effort to implement practices that promote, protect, and support breastfeeding (World Health Organization, 2019). Through this initiative, women who seek their prenatal health care at ”baby-friendly hospitals” have access to a broader support system and resources to initiate and continue with breastfeeding.

Market Analysis

Norman County, Minnesota is the home to 6,579 residents. Of those residing in Norman County, 49.8% are female. With nearly half of all residents being of the female gender, it is essential to provide the necessary services locally to serve the population of the county (United States Census Bureau, 2016).

A market analysis was completed by the Essentia Health marketing department for the rural area of Norman County, Minnesota. The analysis consisted of inpatient obstetric discharges by zip code for the following towns within Norman County: Ada, Borup, Gary, Twin Valley, Hendrum, and Perley. One town within the county, Halstad, was left out of the market analysis because the town has a Sanford clinic, which manages the obstetric patients who seek care at that clinic. The market analysis indicated that birth numbers for the fiscal years 2014-2016 delineated by the zip code in which the mother resides. The completed market analysis

revealed a total of 185 inpatient obstetric discharges from 2014-2016 from the rural towns in Norman County previously mentioned with 85 of those women residing within the zip code for Ada. Appendix A is the completed market analysis as described above.

In addition to prenatal care, access to lactation support was identified as a need within the Ada community. A local survey that was distributed and completed by 10 women who reside in Norman County and had given birth between the years 2014-2016, indicated 70% of mothers residing in Norman County, Minnesota travel between 30-60 miles to meet with a lactation nurse after having their babies, while 20% of mothers had to travel > 60 miles. Appendix B is a copy of the lactation survey results.

Purpose of the Project

The Star Tribune (2019), reported there was a discontinuation of obstetric services at 134 rural United States hospitals since 2011 with 13 of those hospitals being located in Minnesota (Olson, 2019). The purpose of the practice improvement project was to improve access to quality prenatal care services in a rural Minnesota community. The implementation of standardized, evidence-based prenatal guidelines by family practice clinicians in the rural clinic can improve birth outcomes for both mothers and the babies. Along with the collaboration of delivering providers in urban hospitals, increased compliance of prenatal care and successful breastfeeding establishment is sought to be achieved within the Minnesota rural community. As a result of rural hospitals ceasing obstetric services, there has been an associated increased rate of preterm births (Olson, 2019). Having available and consistent prenatal services should improve the overall health for the mothers and babies within this community.

Project Objectives

Objective One

Develop and implement a standardized, evidence-based set of best practice guidelines for prenatal care in a rural Minnesota community by August 1st, 2018.

Objective Two

Create a collaboration, by developing a standard of care and visit sequence, between RHC clinicians, and regional delivering providers by August 1st, 2018.

Objective Three

Implement evidence-based lactation resources in a rural Minnesota community by December 31st 2018.

CHAPTER TWO. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

The Importance of Prenatal Care

Prenatal care benefits the health of the unborn child and the mother. Women are advised to initiate prenatal care as soon as they learn they are pregnant or can even initiate care prior to pregnancy which is referred to as preconception care. Preconception care can help women promote a healthy pregnancy by meeting with their providers prior to becoming pregnant to review some of the essential components, to ensure optimal health is attained prior to becoming pregnant (World Health Organization [WHO], 2013).

According to the National Institute of Health (NIH) (2017), essential components of preconception care include:

- Development of a plan for reproductive life.
- Increasing daily intake of folic acid to at least 400 micrograms.
- Making sure immunizations are up to date.
- Controlling diabetes and other medical conditions.
- Avoiding smoking, drinking alcohol and using recreational drugs.
- Attaining a healthy weight.
- Learning about family history and the health history of their partner.
- Seeking help for depression, anxiety or other mental health issues (What is prenatal care and why is it important section, para. 3).

Prenatal care is the primary way to identify problems that could occur during pregnancy, which gives healthcare providers the means to access and manage risks for preterm labor and other health threats to the mother and baby (Martin, 2012). Although preterm labor can occur in

pregnancy at any given time without warning, woman who are obese, lack appropriate prenatal care, and those who have had previous preterm labor are at increased risk (Martin, 2012).

Not only does adequate prenatal care help identify potential problems and decrease the incidence of preterm labor, but also has health benefits for the mother that can significantly affect overall health and chronic medical problems (American Pregnancy Association, 2015). According to Yan (2016), mothers who receive inadequate or no prenatal care are at a higher risk for insufficient gestational weight gain, prenatal and postpartum smoking, premature rupture of membranes, precipitous labor and not initiating breastfeeding.

A retrospective cohort study completed in Manitoba, Canada is particularly relevant due to its close proximity (200 miles north) to Ada, MN where this practice improvement work took place. The research examined the association of inadequate and intensive prenatal care with maternal, fetal, and infant outcomes. The study revealed that inadequate prenatal care was associated with increased odds of multiple adverse pregnancy outcomes coupled with lower likelihood of health related behaviors (Heaman et al., 2018). The study completed by Heaman et al. (2018) also revealed that inadequate prenatal care was significantly associated with increased probability of a Neonatal Intensive Care Unit (NICU) admission, whereas intensive prenatal care was not a significant predictor for a NICU admission. When comparing health related behaviors with the two groups of women who either received inadequate or intensive prenatal care, the group who received inadequate prenatal care were less likely to initiate breastfeeding, and less likely to immunize their infant (Heaman et al., 2018). In contrast, a multinational trial showed that decreasing the number of prenatal visits to a minimum of four did not increase adverse outcomes, but fewer visits were related to a small decrease in patient satisfaction of care (Zolotor & Carlough, 2014).

Access to Prenatal Care

Access to high-quality care during pregnancy and childbirth is a challenge for women living in rural and remote areas of the United States, partly due to shortages of childbirth providers (Kozhimannil, Henning-Smith, Hung, Casey, & Prasad, 2016). Up to 40% of all United States counties, most of them rural, lack a qualified childbirth provider (Kozhimannil et al., 2016). With the lack of qualified child birth providers in up to 40% of United States counties as previously mentioned, it is up to health care organizations to develop care models to provide necessary care to women residing within their community.

The decreasing number of rural hospitals providing obstetric care over the past two decades, presents a concern about healthcare access, especially among women of childbearing ages. Closure of hospital obstetric units and reduction of maternity services (providing only prenatal care, but not labor and delivery services) in rural areas may prolong travel time for rural women who already travel further to access care than their urban counterparts (Hung et al., 2016, p. 1547). Travel required for care is associated with increased costs, greater risk for complications, longer lengths of stay, financial burden, and emotional and physiological stress (Hung et al., 2016). The closures of rural hospitals that have obstetric units and offer prenatal care, leads to a multifactorial disadvantage to women who reside in rural areas.

Quality of Rural Prenatal Care

A challenge with healthcare improvement and reform is ensuring that individuals, particularly those who have low incomes or other risk factors that make them vulnerable to poorer health outcomes, have access to care (Rossier Markus & Rosenbaum, 2009). Another challenge related to not just the vulnerable population, but to all patients seeking care, is maintaining high quality care. The quality of care delivered in health care systems has been

monitored over the years. Efforts to also address the quality of maternity care have been undertaken by a variety of organizations including The Joint Commission as well as state departments of health. Through these efforts, the perinatal care core measures set was developed and is mandated for hospitals that have at least 1,100 births per year to report (Kozhimannil et al., 2016). Although this effort is important for monitoring for quality of care provided by hospitals that have busy labor and delivery units, it overlooks the rural hospitals that do not serve similar patient volumes. As of January 2016, The Joint Commission required all accredited hospitals with at least 300 births annually to report the perinatal care core measures. Unfortunately, more than half of rural hospitals providing maternity care remain exempt from reporting such quality metrics due to low birth volumes (< 300 births annually) (Kozhimannil et al., 2016). Hospitals that have low birth volumes can still report the quality metrics, however it is not required. Furthermore most small hospitals do not have the human and informatic resources required to glean the data required. As a result of this, residents residing in rural communities have limited access to quality information about maternity care in rural areas as compared to the care provided in urban areas (Kozhimannil et al., 2016).

Another factor that is directly associated with the quality of care is the use of evidence-based guidelines. The American College of Obstetricians and Gynecologists (ACOG) was founded in 1951 and is an organization that is dedicated to the improvement of women's health (ACOG, 2017). Because of the use and adherence to evidence-based guidelines, prenatal care can be unified and subsequently morbidity rates across the spectrum of pregnancy care are reduced (Schoen, Tabbah, Iams, Caughey & Berghella, 2015).

Lactation Resources

Breastfeeding has been linked to positive outcomes for both mother and infant. The benefits of breastfeeding include reduction in rates of acute otitis media, gastrointestinal infections, respiratory tract diseases, childhood obesity, and type 2 diabetes (Kapinos, Bullinger, Gurley-Calvez, 2017). Benefits to breastfeeding mothers include increased postpartum weight loss, decreased risk of breast and ovarian cancer, and lower incidence of cardiovascular disease (Schwarz et al., 2017). The United States Preventative Services Task Force (USPSTF) (2016) recommends providing interventions during pregnancy and after birth to support breastfeeding. In its recommendation statement, the USPSTF recommendation statement notes that breastfeeding support should be given during the course of a pregnancy by the primary care clinician. This can be accomplished by providing interventions directly, or by placing referrals to help mothers make an informed choice about how to feed their infant and how to be successful with their desired method (USPSTF, 2016).

With the Affordable Care Act mandating coverage for lactation support services, breastfeeding rates increased by as much as 2.5%, which affects approximately 47,000 infants who were initiated on breastfeeding in the United States in a given year (Kapinos et al., 2017). Higher breastfeeding rates lead to overall lower costs of healthcare consumption related to the lower incidences of chronic diseases, which breastfeeding prevents.

Theoretical Framework

Nursing

The middle range theory that was used to guide this project is Ramona Mercer's Maternal Role Attainment-Becoming a Mother theory (Masters, 2012). Mercer's theory correlates with the progression that women who become mothers experience, by segregating it into four stages. The

four stages are the anticipatory stage, formal stage, informal stage, and role identity stage. The anticipatory stage starts during pregnancy and includes preparation; during the anticipatory stage the initial social and psychological adjustments to pregnancy and the expectation of the maternal role are learned by seeking out information and by visualizing self as a mother (Masters, 2012). The rural health clinic supported this stage by providing Registered Nurse (RN) education to expectant mothers, as well as proving prenatal care by providers at the clinic.

The formal stage starts with the birth of the child and continues through the first two weeks (through physical restoration). In the formal stage, maternal behavior is learned from peers. The rural health clinic will assist the mother with the formal stage by assisting in facilitating the transition and communication with the delivering facility, as well as providing care to the women post-partum and providing clinic services to the baby such as well-child check-ups.

The third stage is the informal stage, which generally starts about two weeks after birth and continues until about four months after birth (until normalization is reached). During the informal stage, the mother develops her own style of parenting and has learned the infant's cues. During the informal stage, the mother and baby return to the clinic for well-child checks, so the providers at the rural health clinic can recognize the stages of the Maternal Role Attainment-Becoming a Mother theory that the mother is going through and provide support as needed.

The final stage of maternal role attainment is the role identity stage. During this role identity stage, the mother views herself as competent. The role identity stage generally begins around four months after the birth of the child and continues through the child's first year (Masters, 2012). Through continued family practice services provided in the rural setting, the

provider will establish relationships with these patients and provide care through the continuum of their lifespan as they age.

Mercer's theory was chosen to guide this project as it follows the progression of women as they transition into the role of motherhood. Application of the Mercer theory to everyday practice, facilitates understanding of the nursing staff and clinicians, about the transitions that women go through when they attain the maternal role. This theory will assist in clinical application when providing prenatal care to women in the rural clinic setting.

Quality Improvement Method

The Model for Improvement is the framework used to guide this practice improvement project implementation, which was developed by Associates in Process Improvement (API) for use by the Institute for Healthcare Improvement (IHI) to guide quality improvement projects (PDSA, 2013). The model includes three focus questions: what are we trying to accomplish, how will we know that a change is an improvement, and what changes can we make that will result in an improvement?

Within the model, setting an aim for the project is one of the first steps. This includes a time specific measurement with a patient population specific target. (Institute for Healthcare Improvement, 2018). For this project specifically, the aim was the pregnant and lactating females who reside in rural Norman County. After setting an aim, measures need to be established. The established measures are generally quantitative measures to determine if a specific change actually led to an improvement (IHI, 2018). Selecting change is the final component of the IHI quality improvement model. After completing the thee focus questions within the model and evaluating if the change has a positive impact, the process of implementing and monitoring the change is the final step.

The model for improvement cycle includes the Plan-Do-Study-Act (PDSA) cycle. The PDSA cycle is shorthand for testing change; by planning it, trying it, observing the results and acting on results of what has been learned in the cycle ("Plan-Do-Study-Act (PDSA) Cycle," 2013). This model was chosen for the implementation of prenatal services in a rural health clinic, as it was guided by the plan, and it allows for reflection of the results to monitor for impactful change.

Plan Do Study Act (PDSA) Worksheet

3 fundamental questions to ask before beginning your PDSA work:

1. What are we trying to accomplish? Implementation of perinatal services in a rural health clinic setting.
2. How will we know that a change is an improvement? The clinic will offer structured perinatal services to females in the rural setting.
3. What changes can we make that will result in improvement? Education of staff and collaboration with the hospitals that perform deliveries of babies to come up with a team approach to providing care.

Purpose: To expand the care delivered at Essentia Health Ada to include perinatal services offered by APC's in collaboration with the delivering physician or mid-wife.

Goal: To have a structured care delivery system in place for providing perinatal care.

Baseline Data: Currently no structure in place for perinatal care.

Start Date: December 2016

End Date: January 2019

Plan:

- To collaborate with other Essentia facilities that have birthing units in order to come up with a system to provide routine perinatal care in the rural health clinic, while creating a birthing plan with patients at the delivering facility of their preference.
- Working with the Essentia Health Ada medical staff in collaboration with the delivering provdiers to come up with a sequence of prenatal visits and also a referral list on which patients can be managed in the RHC by family practice and which patients require management by OBGYN.
- Facilitate lactation education and prenatal care education to the Essentia Ada Nursing staff.

Do:

- Met with Lindsay Bontjes from Essentia Fargo who is leading the "Baby Friendly" initiative to coordinate education for the clinic RN's and LPN's as far as prenatal intake, screening, and lactation education.
- Educate clinic RN staff on Essentia "Oh Baby" app for smartphones
- Collaboration with the delivering sites to develop a referral process and sequence of visits.
- Work with the Ada medical staff and delivering providers on a list of patients that require management by OB versus family practice providers
- Subscription to ACOG for the latest perinatal guidelines.

Act:

Action (what)

- Work with Norman Mahnomen Public Health on collaboration with their current lacatation resources
- Explore the possibility of expanding telehealth to include OB visits
- Look into the possibility of adding fetal NST as an option at the RHC

Study:

- Evlautate completion rates of required nurse and clinician training
- Implemented August 1st with RN new OB visits and new guidelines placed into practice
- RN lacation not in full swing due to lack of extansive training, and RN comfort level, still refer to Fargo outpatient or Norman Mahnomen Public Health.
- Evaluate the financial impact the pernatal guideline implementation has on the RHC

Figure 2. PDSA worksheet for prenatal and lactation services project at Essentia Health Ada.

CHAPTER THREE. PROJECT DESIGN

Project Implementation

Based on community need and the desire to expand prenatal care by the former medical director at the RHC; the project came to fruition. Administration and current medical staff were assessed for interest in providing prenatal care at the rural health clinic. Three APCs and one physician agreed to proceed with implementation of a prenatal program at the RHC. Guided by the planning phase of the PDSA cycle, the project was then initiated by utilizing the PDSA worksheet to use as a tool through the phases of the project.

Project Design

Objective One

The first objective of this project was to develop and implement a standardized, evidence-based set of best practice guidelines for prenatal care in a rural Minnesota community.

By utilizing ACOG best practices as a reference, the medical director of the rural health clinic, who is also the only family practice physician on staff, along with the three APCs were all involved in the development of the prenatal care guidelines. The best practices in prenatal care were brought to the Essentia Health Ada medical staff meeting on July 11th, 2018 for their input with the development of the guidelines to be utilized in the RHC. The medical staff, consisted of all of the APCs and the medical director of the RHC. Appendix C is the document which highlights best practices in prenatal care that were developed and implemented at the RHC.

After the guidelines were approved by the medical staff, the next step essential for project success included nursing staff education and training on the clinical aspects of prenatal care. Education and training was done collaboratively with the OBGYN clinic at Essentia Health located in Fargo, North Dakota. Two Licensed Practical Nurses (LPNs) at the rural health clinic

went to Essentia Health Fargo and shadowed an LPN at the Essentia Fargo 32nd Avenue clinic in the OB department to review the rooming and documentation processes within the "stork" application of the electronic medical record (EMR). The LPNs spent eight hours shadowing, to learn the workflows associated with arriving and rooming patients for prenatal visits. After spending a day shadowing in Fargo, the LPNs then trained the fellow LPN at the rural health clinic on the rooming and documenting process. To educate the clinic LPNs on the prenatal guidelines, an email was sent to all clinic nursing staff with the guidelines attached and a face-to-face training was provided by the co-investigator. Additionally, it was also reviewed at a nursing huddle. The guidelines were originally going to be assigned through the online learning module, but an in-person training was held by the co-investigator on July 18th, 2018, instead, which provided an opportunity for the staff to ask questions.

The RHC staffs one clinic RN and one RN supervisor. The RN supervisor did not have the capacity to take on a new role within the clinic, so it was decided by the clinic administrator that the clinic RN would be the primary nurse for this project. The administrator of the RHC decided it would be best to have two RN's trained on obstetric education and prenatal care therefore, one of the hospital RN's attended the training with the primary clinic RN. The two RNs from the rural health clinic, shadowed the RNs at the Essentia Health Fargo 32nd Avenue OBGYN clinic for 8 hours. The RNs were oriented to the same new OB visits that are completed by the nursing staff in Fargo. The RNs reviewed taking a patient history, providing patient education, and appropriate documentation in the EMR.

The RNs at the RHC also spent one hour of training with the women's and children's health program education manager, covering a smartphone application available to patients that is called "Essentia Oh Baby." The RNs acclimated themselves with the functionalities of the

application in order to utilize it as a tool as part of the prenatal education for expectant mothers. Through this application, a majority of the reference materials for expectant mothers were reviewed as well as navigation through the application itself. Appendix D covers some highlights of the content within the "Essentia Oh Baby" application.

Objective Two

The second objective of this project was to create a collaboration, by developing a standard of care and visit sequence, between the RHC clinician, and regional delivering providers.

Due to the lack of delivery services in Ada and its surrounding area, establishing relationships with the hospitals that conduct deliveries was essential to program success. The co-investigator reached out to the three facilities and worked with their providers that performed deliveries to establish relationships with them and making them aware of the prenatal services that are offered at the rural health clinic. A referral process which was preexisting within the electronic medical record (EMR), was determined to be the preferred method to refer the patients to the delivering provider at the visit intervals set by the RHC medical staff in collaboration with the delivering provider.

Another aspect of this collaboration was developing a sequence in which the patient would need to see the delivering provider rather than being fully managed by family practice right up until delivery. The sequence of when the patient was to see their delivering provider was integrated into the guidelines developed in objective one, so they providers could have the resources readily available to them in one document. Through development of objective two, the collaborative partners at the delivering hospitals were also clear on stating there are certain maternal and pregnancy related conditions that should not be managed by family practice, but

rather by OBGYN. Appendix E is the list of conditions that was provided to the RHC on conditions that require further management by OBGYN.

As part of the new OB educational appointment, the RN educates the patient on the options available for selecting a hospital at which she would like to deliver her baby. Besides covering the names of the providers and their credentials, the RN also reviews the distance to travel to each hospital from the clinic's two largest cities in which it serves its patient population, Ada, MN and Twin Valley, MN. Appendix F is a reference made by the co-investigator for the RN to use as a reference when educating the patient on the three Essentia hospitals and perform deliveries.

Objective Three

The final objective of this project was to implement evidence-based lactation resources in a rural Minnesota community.

The co-investigator learned that there had been no previous lactation education completed by any staff at the RHC. Knowing this was an area of opportunity, the co-investigator sought out local educational opportunities for the RNs regarding lactation. Lactation education for RNs was taken from the "Ten Steps to Successful Breastfeeding" program used by hospitals seeking Baby-friendly designation. An essential component of the ten steps is providing education on the importance of breastfeeding to pregnant females, and also providing support once breastfeeding has been established. With this training, the rural clinic staff can foster a supportive environment for success to the pregnant females in which the clinic serves. The two designated perinatal care RNs at the rural health clinic completed training on lactation by attending a workshop on infant feeding called "Evergreen Perinatal Excellence in Care with the Ten Steps" located in Detroit Lakes, Minnesota; and also spent eight hours shadowing a lactation

nurse in the outpatient setting at Essentia Health Clinic in Fargo, North Dakota. Appendix G covers the course objectives for the RN lactation training. All of the family practice APCs and clinic LPN staff were assigned a course in the online learning module through Essentia. The course was called "Baby Friendly West".

Financial Impact

While being a necessary service to the rural community, the prenatal program can also have a positive financial impact for the clinic. Following the "study" portion of the PDSA cycle, to determine the financial component of this project, a coding and billing inquiry was completed of the prenatal appointments that occurred at the rural health clinic. Those visits had been coded with a Current Procedural Terminology (CPT) code of 99213, which was billed out for $166. With the average prenatal care requiring ten prenatal visits, there is a potential impact of $1,660 per patient, not including ancillary charges, such as ultrasound and lab work, that are also generated during prenatal care. With the addition of these services there is a potential for increased clinic visits and an increase in billed ancillary services involved with prenatal care.

Besides billing for the OB visits, there is also the opportunity to capture those newborns into the RHC patient panel. The financial impact of gaining patients is significant, as clinic volumes are important for sustainability in the rural area. Through the first year of life, it is recommended that infants have six well child examinations. The RHC bills out CPT code of 99391 for well child examinations birth through age one. The CPT code of 99391 is billed out at $216. With the additional cost of immunizations for the two, four, and six months well child exams, an additional $693 is billed to commercial insurances for a visit total of $909 for the well child exams with immunization administration. For those with Minnesota Medical Assistance as a payer, the clinic bills out the CPT of 99310 for $216, however, the state provides the clinic

with the actual vaccines for these patients, so the clinic is only able to bill for the administration of the vaccines which is an approximate $84 (Essentia Health, 2019).

Marketing

Once all of the components of the project were completed, collaboration between the co-investigator and the Essentia marketing department took place to make the community aware of the new structured services that were available at the rural health clinic. A meeting with the Essentia Health marketing representative and the administrator of Essentia Health Ada was held on August 28th, 2018. It was decided upon by the administrator and marketing representative that running ads in the paper and on social media would reach out to the patient population who already sought out healthcare at the RHC, so the possibility of gaining new patients was thought to be low. The idea of running a clip on "Access Health" on the local radio station came up, so the co-investigator got in touch with the local radio station and recorded a clip highlighting the prenatal services offered at the RHC. The clip was recorded on October 12th, 2018 and aired on October 13th, 2018 on the following radio stations: 106.5 KRJB in Ada, Gold 101.5 KRJM in Mahnomen, and 96.7 KKCQ/1480AM KKCQ in Fosston. Appendix H is a coverage map in which the "Access Health" radio clip was broadcasted.

Timeline of Project

This project was presented to administration at the rural health clinic in November, 2017, who gave their support to proceed with the prenatal program which was then added to the facility's strategic plan for fiscal year 2018-2019 (FY 18-19). The timeline for the practice improvement project was to have completed the project proposal meeting with the project committee in April of 2018, with staff training beginning in June of 2018 and continuing through the end of July. Project implementation date was set for August1st of 2018, which was one

month into fiscal year 2019. The implementation date was chosen as it was a good way to track a new or enhanced program in terms of clinic and service growth. Data was collected monthly for the first five months post implementation and was evaluated beginning in January, 2019. Table 2 is a further descriptive timeline of this project.

Table 2

Project Timeline

Event	Date
DNP Dissertation Proposal Meeting	April 19th, 2018
RN and LPN training	June-July 2018
Ada Medical Staff Meeting review of project	July 11th, 2018
Project Implementation	August 1st, 2018
Essentia Health Ada Director's Council Presentation of Project	August 20th, 2018
Meeting with Marketing	August 28th, 2018
"Baby Friendly West" assigned in SABA	September 16th, 2018
Recorded radio clip for "Access Health"	October 12th, 2018
Radio clip aired live on KRJB, KRJM, KKCQ	October 13th, 2018
End of data collection period	December 31st, 2018

Resources

Resources required to ensure the success of this project were time and commitment by staff to complete the educational and training components. Financially, the facility had to compensate staff for their training time, which included hourly wages, travel time to get to Fargo, and mileage. Hourly wages were also paid while staff completed the online modules. The registration fee for each RN to complete the ""Evergreen Perinatal Excellence in Care with the Ten Steps" workshop on lactation was $200 per nurse. Technological resources involved included the electronic medical record, the smartphone application, and the use of an iPad for interpretation and sign language in the event a patient did not speak English or was deaf. An

attempt to arrange an in-person interpreter is arranged for all scheduled appointments, if the clinic is aware that the patient is deaf. Table 4 delineates the cost inputs associated with the implementation of this project.

Table 3

Cost

Event	Cost
Oh Baby App	$7,500 (corporate expense, RHC did not have to pay)
RN training	$400 class - $150- mileage. $1200- wage for a total of $1750
Marketing	Access health clip was free
LPN training	$50-mileage
Provider training	free
Educational materials	$25
ACOG Educational Affiliate Membership	$265
Total cost of implementation	*$9,560*

Congruence of the Project to the Organization's Strategic Plan

In order for change to be successfully accomplished, there are essential elements that must be in place prior to implementation. Some of the important elements of change are vision, belief, strategic planning, actions, persistence, and patience (Melnyk & Fineout-Overholt, 2015). The element for implementing change is having a clear vision. A clear vision of the desired outcome is necessary in order to unite the stakeholders involved (Melnyk & Fineout-Overholt, 2015).

The mission of Essentia Health is "we are called to make a healthy difference in people's lives" (Essentia Health, 2018). As part of the mission to make healthy differences in people's lives, Essentia also has belief statements surrounding their organizational aim. One of their

belief statements ties directly to the goal of this project implementation is, “We believe in having a meaningful presence in the communities we serve” (Essentia Health, 2018). The implementation of the evidence-based prenatal guidelines at the RHC, it is an example of how we can fulfill out calling to serve the community in which we serve.

The vision of this project was presented to stakeholders at Essentia Health Ada Clinic, and they fully supported the implementation of prenatal services in the rural health clinic setting and have added the project to their organization’s strategic plan. By implementing structured prenatal services, it expands the scope of service offered by the rural health clinic. Appendix I is the facility’s strategic plan, which includes the addition of prenatal services.

Protection of Human Subjects

An institutional review board (IRB) application was filed with North Dakota State University (NDSU). The IRB office determined this project does not require IRB approval or certification of exempt status as it did not fit in the regulatory requirements of research involving human subjects. Appendix J is the NDSU IRB letter and appendix K is the letter of support from the Essentia Health Ada administrator.

CHAPTER FOUR. EVALUATION

Data Collection

Studying outcomes is essential to monitor the success and failures of the project. Following the "study" portion of the PDSA model, data collected from the EHR for project purposes was done by the clinic supervisor. The clinic supervisor obtained the data by running reports generated through the EHR, which included the OB visit type. After the co-investigator reviewed the reports, the co-investigator worked with the clinic supervisor and the APC in the RHC, who completes perinatal care, to cross reference for report accuracy. The number of RN ancillary visits of appointments with the RN for both prenatal education visits and lactation visits were collected manually by the RN supervisor and provided to the co-investigator.

The overall goal of the project was to increase prenatal care and services available to pregnant women who reside in Norman County, Minnesota by providing high quality standardized, evidence-based prenatal care at the RHC. Upon implementation of this project, OB visits were tracked and reported out annually at the RHC annual review meeting, and will continue to trend the program development of prenatal services offered in the RHC over time.

Objective One

To evaluate the first objective of this project, course completion rates by providers and nurses were monitored by the co-investigator to ensure timely completion of assigned education prior to implementation of the services. The provider education that was completed at the medical staff meeting by the co-investigator was denoted in the medical staff meeting minutes, of which providers attended the meeting and received the training. The meeting minutes were recorded by an administration assistant at the RHC, and reviewed by the co-investigator to assure attendance. The evidence-based guidelines were placed into a document on Essentia letterhead,

and shared with the clinic nursing and clinician staff. In addition, the guidelines were also printed, laminated and placed in each clinic exam room by the co-investigator so the provider has them readily available then they were providing patient care.

Clinic nursing shadowing hours were manually audited by the co-investigator in collaboration with the clinic supervisor. Nursing staff logged their time on their electronic time cards, and mileage was submitted via an online reimbursement request form.

Objective Two

In order to develop a successful collaboration, a face-to-face meeting was completed via Skype between the operation manager and inpatient labor and delivery manager from Detroit Lakes. The communication from the Fosston and Fargo sites was between the co-investigator and clinic supervisors from of each of those two facilities.

The second objective of this project was evaluated by having a formal process in place by which patients could be managed by a family practice provider in a rural clinic, and which patient conditions required further management by an OBGYN. Along with determining which patients could safely be managed by rural family practice providers, this objective was also evaluated by determining a set frequency of visits the patient was required to see their delivering provider, so they were not showing up to labor and delivery units without any previous contact with a provider capable of performing the delivery of the baby.

Objective Three

The rural health clinic's lactation support capabilities were evaluated by the clinician and nursing staff completion rates of the assigned lactation training. The electronic training module called "Baby-Friendly West" was tracked via Essentia's online learning module, and the course completion for the two RN's who attended the Evergreen workshop were tracked by their time

sheets and course completion certificates. Along with recording their time on their electronic time sheet, the mileage for travel to the Evergreen workshop was also tracked by the co-investigator.

CHAPTER FIVE. RESULTS

Objective One

The first objective of this project was to develop and implement a standardized, evidence-based set of best practice guidelines for prenatal care in a rural Minnesota community by August 1st, 2018.

An evidence-based set of best practice guidelines for prenatal care were developed and implemented at the RHC. Please refer to Appendix C for the developed document. One hundred percent of the clinicians at the RHC completed education on the prenatal care guidelines at the medical staff meeting that was held on July 11th, 2018. One hundred percent of the RHC nursing staff completed the education on prenatal guidelines.

One hundred percent of the RN staff completed the eight shadowing hours with an RN in the Fargo OB department to get oriented to the RN New OB appointment educational components and documentation components. Two of three clinic LPNs completed the shadowing hours at the Fargo OB clinic.

Objective Two

The second objective of this project was to create a collaboration, by developing a standard of care and visit sequence, between RHC clinician, and regional delivering providers by August 1st, 2018.

The visit sequence for pregnant females being co-managed at the RHC was built into the best practice guidelines so the providers could have it available within one document, Appendix C includes the visit frequency that was established through this objective. Lastly, as part of this objective to create a collaboration with the delivering provider, a list of patient conditions was created and provided to the staff at the RHC of patients who required transfer of care to an

OBGYN Appendix E contains the list of maternal and fetal conditions that was an outcome of this objective.

Objective Three

The final objective of this project was to implement and evaluate lactation resources in a rural Minnesota community by December 31st 2018.

Staff education training was completed and the relationship with Norman Mahnomen Public Health developed should patients of the RHC ever require a referral to the lactation resources that public health has to offer. During the implementation period, there were no RN ancillary appointments scheduled for RN lactation support.

CHAPTER SIX. DISCUSSION AND RECOMMENDATION

Interpretation of Results

The purpose of the project was to improve access to quality prenatal care services in a rural Minnesota community through the development and implementation of evidence-based guidelines, collaboration with regional delivering providers, and implementing evidence-based lactation resources. As evidenced by the project results, the implementation of this project added valuable education to the staff at the RHC, which increased the RHC's access to prenatal care and lactation services.

Objective One

This objective was met, as best practices for prenatal care were developed and implemented from ACOG prenatal recommendations. All of the clinic RN and LPN staff were educated in person and electronically via email of the guidelines, visit sequence, and referral list of patients who should not be managed at the RHC. As a result of meeting this objective, women residing in rural Norman County now have access to prenatal care which can help prevent and inform them about important steps they can take to protect their infant and promote a healthy pregnancy (National Institute of Health, 2017). Successful implement of this objective was due to the RHC's staff being engaged in this project to implement the prenatal guidelines to expand prenatal are out to the rural area.

Objective Two

The objective aimed at developing a collaboration with regional delivering providers at hospitals capable of delivering babies was met. Since prenatal clinic visits are an important piece to the prenatal puzzle, the partnership with the delivering facility is essential. Although Essentia is one entity, it was interesting to learn provider preferences between the three delivering sites of

Fosston, Detroit Lakes, and Fargo. Since the delivering providers in Fosston are family practice providers, most of the collaboration was completed with the help of the staff in Detroit Lakes, and Fargo. The perinatal Essentia Medical Group (EMG) committee in Fargo came up with a list of patients that they would prefer not to be managed by family practice providers out in the region due to the complexity of care involved and the level of risk. Once Fargo developed the list of patients that needed to be managed by an OBGYN, they shared it with Detroit Lakes, and it was adopted there as well by their perinatal EMG. The list was presented to the Ada medical staff so they were aware of the conditions in which patients would require transfer of care.

Appendix K is the document that the Essentia Fargo perinatal EMG group came up with in which patients would require management by OBGYN rather than family practice (and nurse midwives in the labor and delivery setting). Without the engagement and cooperation of the delivering facilities, objective two would not have been successful. Through sharing their knowledge and their list of patients who need to have OBGYN manage versus family practice, it immensely assisted with the development of the collaborative aspect of this project.

Due to the referral process being initiated with the prenatal guidelines at the RHC, high quality care is ensured to make sure each pregnant female is receiving the appropriate level of care. With objective two being met, continuity of prenatal care exists at the RHC and through delivery of the baby.

Objective Three

Objective three was not met in its entirety. After implementation of a lactation program in the RHC, it was discovered that the RHC does not have the patient volumes to support having a RN remain proficient in providing lactation resources resulting in not RN lactation education being completed.

Two RNs completed the Evergreen Perinatal Education Excellence in Care with the Ten Steps: Lactation Course. After course completion, the primary clinic RN went to shadow in the outpatient lactation clinic with a certified lactation nurse. After shadowing for a full eight hours, the RN felt she did not have the training to be seeing outpatients on her own, and the certified lactation nurse had reservations about a non-certified nurse practicing on their own as well. Although the RNs still have some extra training they completed, they did not complete certification and therefore will educate and assist the provider with lactation encouragement, and can provide some of the basic education, but for more difficult situations regarding lactation, those patients would be referred for an appointment with a certified lactation consultant.

At the point in this project when it was realized the RN lactation visits would not occur at the RHC, the coinvestigator contacted the Norman Mahnomen Public Health Director, to inquire about what lactation resources they have available. The director stated they have two CLCs available and access to an International Board Certified Lactation Consultant (IBCLC) through Polk County, MN. The director of public health stated they would happily accept referrals from the RHC.

Many services, such as labs and ultrasound, necessary in providing prenatal care previously existed at the RHC, but it had never been laid out specifically for OB patients. Scope of service for prenatal care, available at the RHC, will be essential when moving forward if the clinic is looking to expand its available services. It delineates the OB services readily available to patients such as lab and ultrasound availabilities at the RHC. Table 4 highlights the services available at the RHC and can impact positive health outcomes for both the mother and baby by having such services available in the rural community. Due to the implementation of this PIP,

the addition of the RN New OB appointments, and the training the clinicians received on best practices in prenatal care were added to the RHC scope of service specific to prenatal care. As of August 1st, 2018 the RHC has the following access to perinatal care services.

Table 4

Scope of Service

Service/Access:	Hours of Operation:
Access to a family practice provider trained in best practice guidelines for prenatal care.	Monday-Friday 8am-5pm, and ER services available 24/7.
Access to RN for new OB education and limited lactation education	Monday-Thursday 8am-5pm
Ultrasound	Weekly on Fridays
Ability to doppler fetal heart tones	24/7
Access to lab for blood and urine testing with exception to glucose tolerance testing	24/7
Amnisure testing to check for ROM	24/7
1 and 3 hour glucose tolerance testing	Monday-Friday 8am-5pm

Limitations

Like many rural areas, the RHC in Ada has a smaller medical staff, consisting of only four clinicians. Of the four clinicians, there is one family practice physician and three APCs. With not all four providers electing to provide prenatal care at the RHC, a limitation was placed for prenatal care access at the facility selected for this project. The RHC staffs between 1-2 clinicians Monday-Friday, and with only two clinicians willing to provide prenatal care, there is potentially limited availability for pregnant females residing in the rural community to get timely prenatal care, dependent upon the clinician schedule at the RHC. Also, through this project, data was collected on the patients seeking their prenatal care at the RHC but it was discovered that

there are also patients who list their PCP at the RHC, but seek prenatal care outside of the organization.

Limited financial resources available to dedicate to the implementation of this project was another limiting factor. With the financial commitment to have an RN from the RHC complete lactation certification, it was not completed as part of this project. To become a Certified Lactation Counselor (CLC) it requires a 52-hour course is required, and an additional skills validation course, which would cost the RHC approximately $1560 in wages alone not including travel expenses (alpp.org, 2019).

Another limitation of this project, was a low census of prenatal care patients seeking care during the implementation period. Not only did the low census play into the prenatal care visits during the implementation period, but also the lactation services implemented by the RHC. With no lactation referrals during the implementation period, it is difficult to fully evaluate how well the RHC's lactation referral program through public health flows.

With the brief implementation period of this project, there was a time constraint which led to marketing limitations. At this current time, marketing for the RHCs prenatal services has been limited to a one-time radio clip that was aired on "Access Health". The timeline to continue with advertisements in the local newspaper and on social media has yet to be determined by the RHC administrator.

Recommendations for the Site

Having access to high quality prenatal care in the rural setting is a valuable service to the community. By implementing this project, the structured prenatal care in the rural setting adds value to the services that the RHC has to offer. Continuation of this project at the RHC would continue to provide sound, evidence-based prenatal care essential for optimal outcomes for both

mother and baby. The expansion of telehealth services to include OB/GYN could add more of a robust approach to the RHC's delivery of prenatal care. In the state of Minnesota, there has been nearly a 7-fold growth in telemedicine utilization between 2010 and 2015 (Plain, 2019). While reviewing the utilization of telemedicine services in the state of Minnesota the study also found that in non-metropolitan areas, telemedicine services were primarily used as real time services initiated by physicians to treat publicly insured patient, as compared to metropolitan areas where telemedicine services were primarily initiated by patients and covered by commercial insurances (Plain, 2019). The RHC currently has telehealth visits available for pharmacy for medication therapy management, cardiology, and medical weight loss. The addition of telehealth OB services could save the patient from driving to required OBGYN visits as highlighted in the established guidelines for prenatal care at the RHC. Another aspect to consider with the expansion of telehealth services, would be the implementation of telehealth lactation services.

With the expansion of telehealth OBGYN services, it would cause one to reconsider the list of maternal conditions that can be managed at the RHC. If there were telehealth capabilities it would have to go to the OBGYN medical staff and the RHC medical staff to determine which additional maternal conditions could be managed at the RHC. If the RHC gains the capability of telehealth for OBGYN visits and lactation, it would add additional access to the rural site by increasing the services available via telehealth for those patients who would otherwise have to travel a distance in order to receive those services. Another area of opportunity would be to add the capability to complete fetal non-stress tests at the RHC, although this would require additional equipment and staff training. This would allow the rural clinic to expand services and to capture additional revenue.

In addition, a potential opportunity for the site to strive for continued program development and growth is to write for a grant to receive funding. Health Resources and Services Administration (HRSA) is an agency of the United States Department of Health and Human Services, and is the primary federal agency for improving healthcare to people who are considered geographically isolated and medically vulnerable (Health Resources & Service Administration, 2018). Pregnant women and mothers are a priority patient population in which HRSA programs intend to help. There lies a possibility for the RHC to apply for and obtain grant funding through HRSA-19-094 which is a Rural Maternity and Obstetrics Management Strategies Program (HRSA, 2018). The grant was recently posted on February 5th, 2019 while the synopsis of the grant will not be posted until February 22nd, 2019 and the application date is April 23rd, 2019. The clinic administrator, medical director, and co-investigator of the project plan to review the specifics of the grant opportunity once additional information is available.

Partnering with local public health agencies also has advantages for not only prenatal care but other aspects of the continuum of care throughout the life span. The Norman-Mahnomen Public Health department offers the Nurse-Family Partnership, which is a wonderful adjunct to the RHCs prenatal care, but was not utilized during the implementation of this PIP, partly due to lack of awareness. The Nurse-Family Partnership is a program that consists of prenatal and infancy home visits for low-income, first time mothers and their families (Nurse-Family Partnership, 2019). Through these home visits the public health nurses and mothers discuss a range of issues that affect prenatal health.

According to Nurse-Family Partnership (2019) data, some of the improvements that have been observed in randomized, controlled trials of the program are:

- Decreased use in prenatal cigarette smoking.

- Fewer hypertensive disorders of pregnancy.
- Fewer closely-spaced subsequent pregnancies (Nurse-family partnership's first stated goal is improved pregnancy outcomes: healthier mothers who can deliver healthier babies section, para. 3).

By increasing awareness of the public health programs the county has to offer, the RHC can refer first time mothers who qualify for the Nurse-Family Partnership program for the increased health benefits of having a nurse complete home visits. To assist the RHC with program awareness, the co-investigator invited the director of Norman-Mahnomen Public Health to attend a medical staff meeting to share the benefits of not only the Nurse-Family Partnership, but other public health programs that the currently medical staff are not fully aware of due to recent additions to the RHC provider roster.

Application of Project in Another Setting

With the reported decline in maternity wards across the United States, the application of this project in other rural sites is very feasible. Rural healthcare facilities will first have to assess their current capabilities of providing services to the selected patient population, and assess their current medical staff's willingness to collaborate with delivering physicians at larger hospitals to provide prenatal care in the rural setting. Prior to another setting implementing this project, it would be beneficial to first meet with their local public health agency to see how they can collaborate and supplement to provide rural prenatal and lactation services. Also, with the advancement in technology used to deliver health care in today's society, the use of telehealth is also an option for rural sites looking to provide parental care to improve access and expand services.

Implications for Advanced Practice Nursing

By looking for areas of opportunity in the community in which the Advanced Practice Registered Nurse (APRN) serves, the APRN strives to promote high quality care with good patient outcomes. With gaps in rural prenatal care not only in rural Minnesota, but across the United States, the APRN can help bridge the gaps by partnering with health care delivery systems that have OBGYN resources to create a model that delivers collaborative healthcare to pregnant females residing in rural areas. The growing APRN workforce represents a significant supply of primary care providers, who if utilized optimally, are well-positioned to increase access to health care (Poghosyan & Margo Brooks, 2017).

For this success of project implementation, not only is a nurse practitioner essential for success, but also another version of an APRN, a nurse midwife, can help with the rural prenatal case disparity. Another essential medical provider for project success is the physician needed to collaborate with who can perform the delivery. Physician collaboration can either be with a family practice physician who is trained to deliver babies or an OBGYN provider. Without the interprofessional collaboration with the physician, rural prenatal care would not be a success.

Through engaging the APC's in this collaborative model of prenatal care, the RHC is encouraging its staff to bring best practices to the community. Having APCs on staff is essential to meet and maintain the RHC designation, and by engaging and empowering the APCs to develop and deliver evidence-based care, the RHC adds value to the community.

Not every APRN is a DNP prepared nurse practitioner and there are some elements that separate the DNP-FNP from other professions. The DNP strives for continuous quality and outcomes improvement by collaborating with healthcare leaders, clinicians, patients, physicians, and community members to not only maximize their impact on healthcare, but to create health

care delivery models that have impact the health and well-being of patients across the lifespan (Moran et al., 2017). Through this project, the DNP utilized the IHI model for improvement and tested it with the PDSA cycle to implement potential outcome improvements for women residing in rural Norman County to require access to high quality prenatal care, who would have otherwise had to travel a distance and through at times, dangerous weather elements in order to receive prenatal care.

Implications for Future Research

With the ever-growing research, and media reporting on the closures of rural obstetric services across the United States, it is likely that future DNP students may develop a similar PIP on the implementation of prenatal care services in a rural setting. While this PIP was implemented at only one RHC, networking with other rural clinic sites would potentially reach a larger patient population. Further research could also look at the outcomes for both the mother and baby with decreased parental visits in normal healthy low risk pregnancies, or the use of e-visits to complete some of the prenatal care with the use of technology right from the patient's home. Also, future research related to implementation or prenatal care in rural areas could look at administering surveys to delivering providers at hospitals capable of delivering babies to solicit their feedback on how they feel the patients are being managed at the rural clinic by family practice providers. Lastly, future research could look at how a nurse midwife can play a role in decreasing the rural prenatal care disparities by bridging the gap with physician shortage, but still bringing that advanced level of knowledge to the rural area.

Dissemination

Dissemination of project results are critical to show how the DNP prepared nurse practitioner assists in closing the gap in evidence-based practice implementation at the point of

care (Moran et al, 2017). Dissemination of the practice improvement project of prenatal care implementation in a rural setting will be completed by the coinvestigator on April 9th, 2019 via a poster presentation at North Dakota State University. The results of the project have also been shared with the administrator of Essentia Health Ada. In addition, the coinvestigator will submit an informational article to the *Norman County Index* and the *Twin Valley Times* highlighting the prenatal services that are offered at the rural clinic along with highlighting the RN educator and the partnerships that have formed with the delivering facilities.

Conclusion

The practice improvement project's purpose was to provide high quality prenatal care, in a rural health setting, by family practice clinicians. Through the practice improvement project, development of evidence-based guidelines that would fit into the RHC's practice model and scope were developed, and implemented. As a result of collaboration with the delivering hospitals, relationships were established with staff members from all three delivering sites. Also, as a result of the project, visit frequency was determined, a list of patients who would be managed by family practice was presented, an RN prenatal education model was created and implemented, and lactation education was completed by the essential staff at the RHC. Confidence lies within the staff at the RHC, that guidelines will be utilized to provide prenatal care in the rural setting to help close some of the gaps in care, and to help those living in the rural sites have access to high quality prenatal care without having to travel 90+ miles roundtrip to receive all of their prenatal care.

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APPENDIX A. OB MARKET ANALYSIS

Ada Market Area
Obstetrics Inpatient Discharge Data

Market Research
March 2017

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Background

- We have access to MHA (Minnesota Hospital Association) data where I was able to pull inpatient discharges in Obstetrics for the last 3 fiscal years, 2014-2016. From there I narrowed down the requested zip codes and created tables based on that data.

- Zip Codes used:
  - Ada- 56510
  - Borup- 56519
  - Gary- 56545
  - Twin Valley- 56584
  - Hendrum- 56550
  - Perley- 56574

- N/A Zips:
  - Flom- 56541
  - Halstad- 56548
  - Shelly- 56581

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OB Inpatient Discharges by Zip Code
FY14-FY16

EH Service Lines	Obstetrics				
City	Zip	2014	2015	2016	Grand Total
Ada	56510	32	24	33	89
Twin Valley	56584	18	12	10	40
Gary	56545	10	9	9	28
Hendrum	56550	6	2	5	13
Perley	56574	2	2	5	9
Borup	56519	4		2	6
Grand Total		72	49	64	185

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OB Inpatient Discharges
By Zip Code & Hospital
FY14-FY16

Zip Code	City	FARGO, ESSENTIA HEALTH FARGO	FARGO, SANFORD MEDICAL CENTER, FARGO	DETROIT LAKES, ESSENTIA HEALTH ST. MARYS	CROOKSTON RIVERVIEW HOSPITAL	FOSSTON, ESSENTIA HEALTH FOSSTON	FERGUS FALLS, LAKE REGION HEALTHCARE	DULUTH, ESSENTIA HEALTH ST MARY'S MEDICA	GRAND FORKS, ALTRU HEALTH SYSTEM	MINNEAPOLIS, ABBOTT NORTHWESTERN	VIRGINIA ESSENTIA HEALTH, VIRGINIA	Grand Total
2016		**27**	**21**	**8**	**3**	**2**	**1**		**1**	**1**		**64**
56510	Ada	19	10	1	1	1			1			33
56584	Twin Valley	3	2	4	1							10
56545	Gary	1	4	2	1	1						9
56550	Hendrum	2	3									5
56574	Perley	1	2	1						1		5
56519	Borup	1					1					2
2015		**27**	**13**	**3**	**4**	**1**	**1**					**49**
56510	Ada	18	4	1	1							24
56584	Twin Valley	5	4	2			1					12
56545	Gary	3	2		3	1						9
56550	Hendrum		2									2
56574	Perley	1	1									2
2014		**21**	**28**	**8**	**5**	**4**	**1**	**2**	**1**	**1**	**1**	**72**
56510	Ada	13	13	2	1				1	1	1	32
56584	Twin Valley	3	6	4	2		1	2				18
56545	Gary	1	1	2	2	4						10
56550	Hendrum	2	4									6
56519	Borup	1	3									4
56574	Perley	1	1									2
Grand Total		**75**	**62**	**19**	**12**	**7**	**3**	**2**	**2**	**2**	**1**	**185**

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OB Inpatient Discharges/Market Share by Hospital
Zip Codes: 56510, 56519, 56545, 56584, 56550, 56574
FY14-FY16

Hospital Name	2014	% Market Share	2015	% Market Share	2016	% Market Share	Grand Total
FARGO, ESSENTIA HEALTH FARGO	21	29%	27	55%	27	42%	75
FARGO, SANFORD MEDICAL CENTER, FARGO	28	39%	13	27%	21	33%	62
DETROIT LAKES, ESSENTIA HEALTH ST. MARYS	8	11%	3	6%	8	13%	19
CROOKSTON, RIVERVIEW HOSPITAL	5	7%	4	8%	3	5%	12
FOSSTON, ESSENTIA HEALTH FOSSTON	4	6%	1	2%	2	3%	7
FERGUS FALLS, LAKE REGION HEALTHCARE	1	1%	1	2%	1	2%	3
DULUTH, ESSENTIA HEALTH ST MARY'S MEDICA	2	3%	-	-	-	-	2
GRAND FORKS, ALTRU HEALTH SYSTEM	1	1%	-	-	1	2%	2
MINNEAPOLIS, ABBOTT NORTHWESTERN HOSPITA	1	1%	-	-	1	2%	2
VIRGINIA, ESSENTIA HEALTH, VIRGINIA	1	1%	-	-	-	-	1
Total Essentia Health	**36**	**50%**	**31**	**63%**	**37**	**58%**	**104**
Grand Total	72	100%	49	100%	64	100%	185

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APPENDIX B. LACTATION SURVEY RESULTS

Lactation Resources

1. Did you bottle feed (formula) or breastfeed your baby?		
Answer Options	**Response Percent**	**Response Count**
bottle feed	20.0%	2
breastfeed	30.0%	3
a combination of both	50.0%	5
answered question		**10**
skipped question		**0**

2. Did your baby have formula during the first 2 days of his/her life?		
Answer Options	**Response Percent**	**Response Count**
yes	30.0%	3
no	70.0%	7
answered question		**10**
skipped question		**0**

3. If you breastfed your infant, what was the duration of exclusive breastfeeding?		
Answer Options	**Response Percent**	**Response Count**
3 months	50.0%	4
6 months	0.0%	0
9 months	12.5%	1
12 months	25.0%	2
> 1 year	12.5%	1
answered question		**8**
skipped question		**2**

4. If you did not breastfeed your infant, what was the main reason why you chose not to?		
Answer Options	**Response Percent**	**Response Count**
lack of education	0.0%	0
lack of lactation support	50.0%	1
I simply chose not to	50.0%	1
Other (please specify)		3
answered question		**2**
skipped question		**8**

Number	**Response Date**	**Other (please specify)**	**Categories**
1	**Oct 28, 2016 3:20 AM**	Unable to produce milk	
2	**Oct 22, 2016 8:13 PM**	I switched to formula because I wasn't producing enough milk	

3	**Oct 20, 2016 1:13 AM**	breastfed

5. If you work outside of the home, does your employer have a designated lactation room available?		
Answer Options	**Response Percent**	**Response Count**
yes	70.0%	7
no	30.0%	3
answered question		**10**
skipped question		**0**

6. If you work outside the home and breastfeed, does your employer allow sufficient time for you to express milk while at work?		
Answer Options	**Response Percent**	**Response Count**
yes	80.0%	8
no	10.0%	1
does not apply to me	10.0%	1
answered question		**10**
skipped question		**0**

7. Have you ever met with a lactation consultant?		
Answer Options	**Response Percent**	**Response Count**
yes	90.0%	9
no	10.0%	1
answered question		**10**
skipped question		**0**

APPENDIX C. ESSENTIA HEALTH PRENATAL REFERENCE

Essentia Health Ada Prenatal Reference

Trimester	Weeks	Recommended Labs/Screening	Recommended Procedures/Imaging	Consult
1st	First prenatal visit 10-12 weeks	• CBC • Blood type, RH and antibody screen • Urine testing to detect asymptomatic bacteriuria (UA followed by culture if results are +) • Rubella screen for immunity • Syphilis screen * • Gonorrhea and Chlamydia screen* • Hep B surface antigen • HIV antibody testing* • Cervical cytology if appropriate Additional tests to consider: • PPD • Other STI testing if at high risk • Thyroid screen • Vitamin D (25-hydroxy) • Early glucose challenge • Hemoglobin electrophoresis • Varicella antibody test • Genetic screening if appropriate • CVS sampling if required	Dating ultrasound if unknown LMP or size-dates discrepancy on initial exam	RN for new OB education
	11-13 weeks	• Maternal serum screening if indicated	1st trimester ultrasound	
2nd	16-18 weeks	• Offer maternal serum alpha fetal protein		Place consult to delivering provider for 20-week visit. **Detroit Lakes:** DLC OB **Fosston:** FSC Fam/Med

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Essentia Health Ada Prenatal Reference

				Fargo: 32C OB
	15-22 weeks	• Offer quad screening		
	18-20 weeks		Fetal anatomy ultrasound	
** @ 20 and 28 weeks patient will see the delivering provider **				
3rd	28 weeks	• CBC • Antibody testing • Glucose tolerance test • Administer Tdap (per CDC recommendations)		
	33-36 weeks	• Around 35 weeks group B strep screen		RN to offer/arrange for childbirth classes
34+ weeks patient will be seen and managed by the delivering provider				

*Women at high risk or in high prevalence areas should be rescreened in the 3rd trimester

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https://www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Methods-for-Estimating-the-Due-Date

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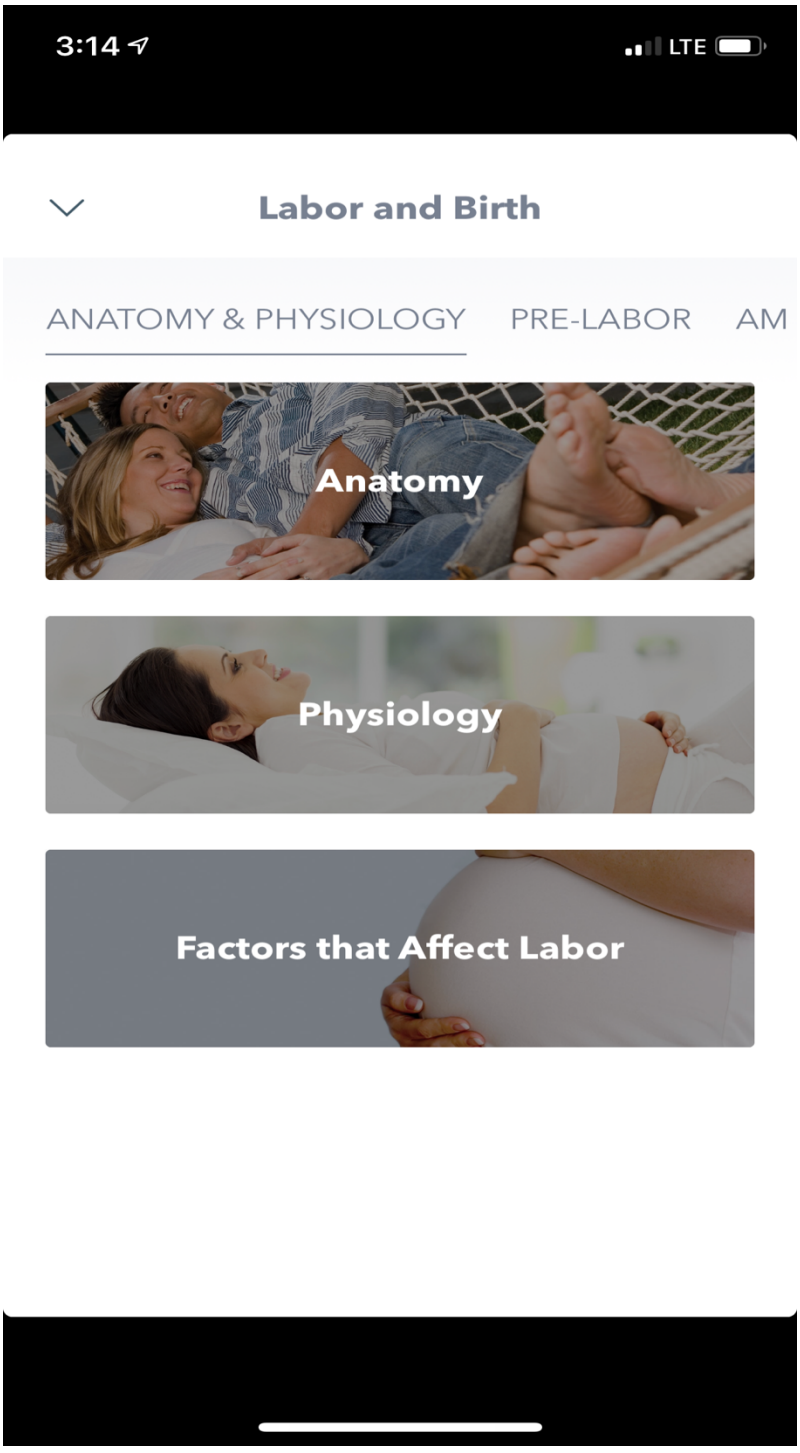
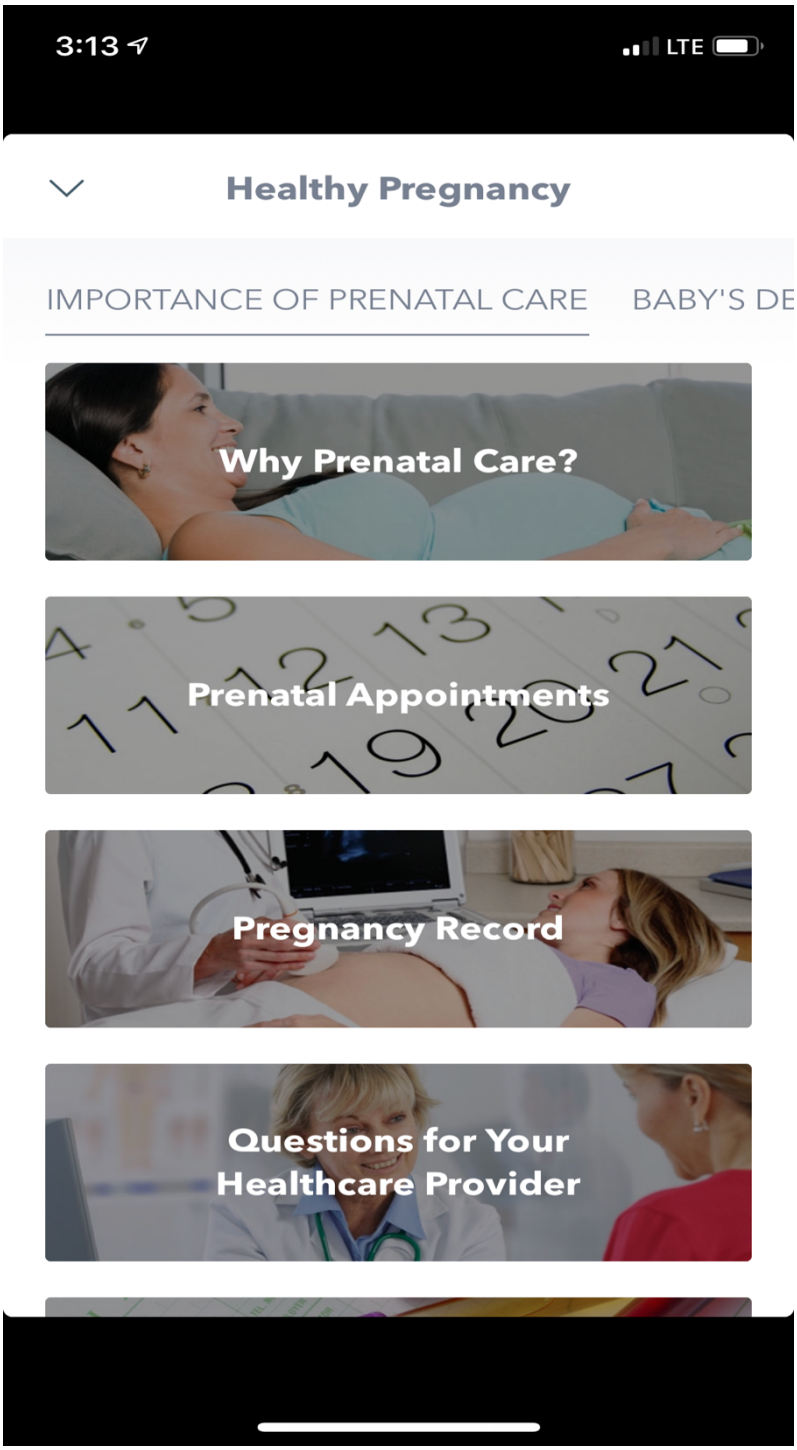
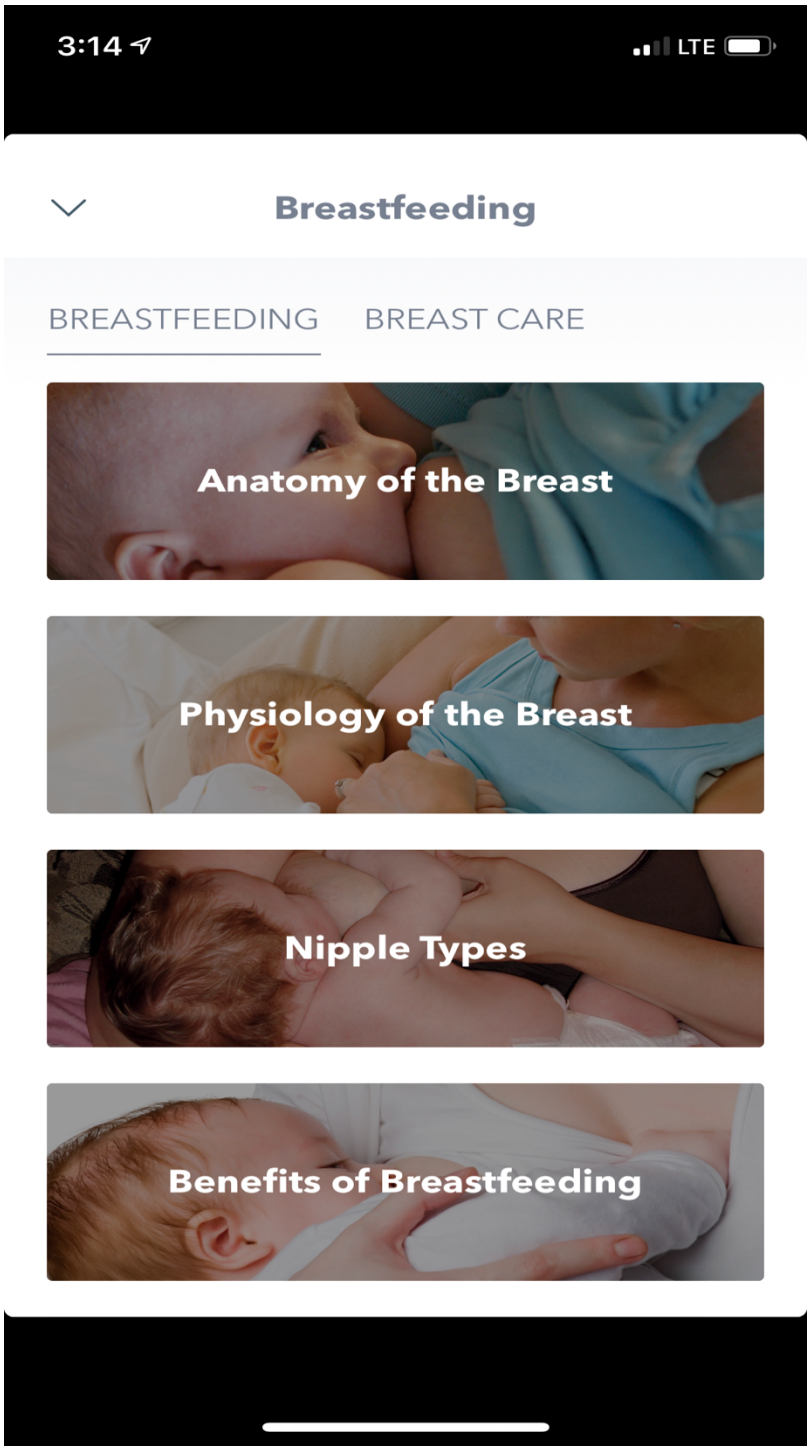
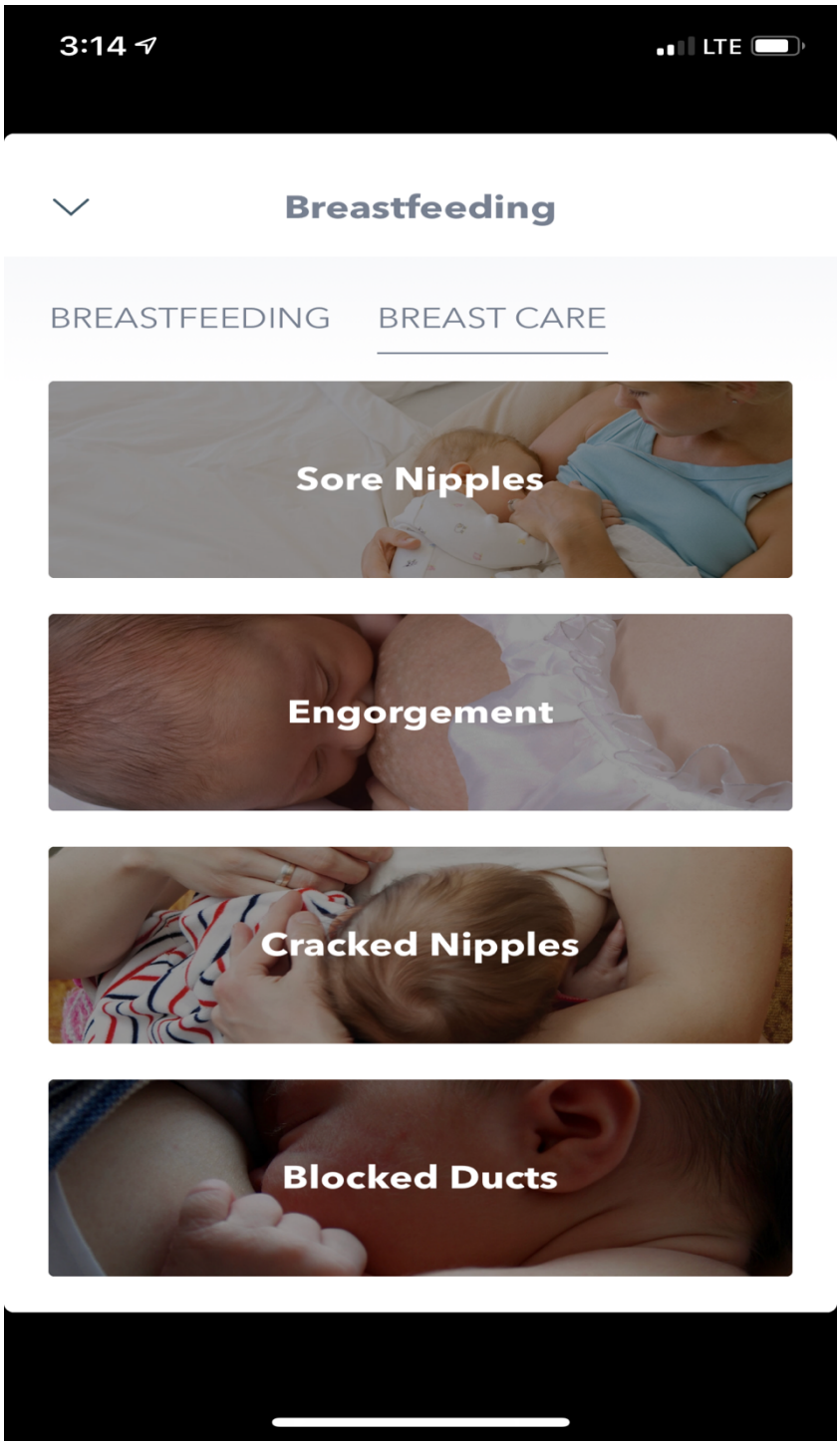
APPENDIX D. OH BABY SMARTPHONE APPLICATION

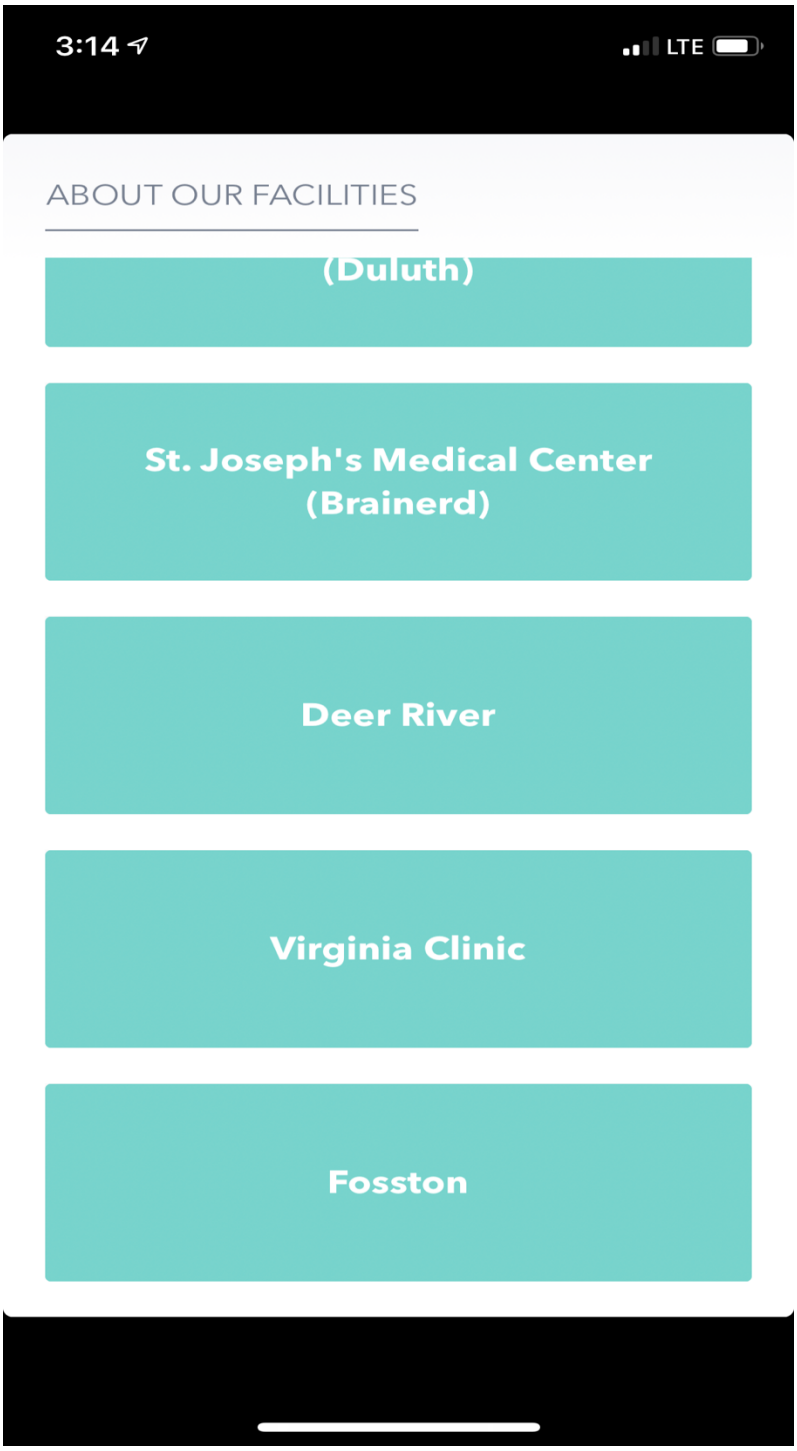

3:14
LTE
Labor and Birth
ANATOMY & PHYSIOLOGY
PRE-LABOR
AM
Anatomy
Physiology
Factors that Affect Labor


3:13
LTE
Healthy Pregnancy
IMPORTANCE OF PRENATAL CARE
BABY'S DE
Why Prenatal Care?
Prenatal Appointments
Pregnancy Record
Questions for Your Healthcare Provider


3:14
LTE
Breastfeeding
BREASTFEEDING
BREAST CARE
Anatomy of the Breast
Physiology of the Breast
Nipple Types
Benefits of Breastfeeding


3:14
LTE
Breastfeeding
BREASTFEEDING
BREAST CARE
Sore Nipples
Engorgement
Cracked Nipples
Blocked Ducts


3:14
LTE
About Us
ABOUT OUR FACILITIES
Fargo
St. Mary's Detroit Lakes
St. Mary's Medical Center (Duluth)
St. Joseph's Medical Center (Brainerd)


3:14
LTE
ABOUT OUR FACILITIES
(Duluth)
St. Joseph's Medical Center (Brainerd)
Deer River
Virginia Clinic
Fosston

APPENDIX E. CONSULT AND TRANSFER LIST

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Essentia Health Ada Guidelines

Family Practice Consults and Transfers to OB/GYN

Overview: Family Practice will seek consultation or transfer of care for any patient who requires care outside the scope of practice of low risk obstetrics. Rather than specify which situations shall require consultation or transfer, a list of circumstances will be presented below that cause a need for communication to occur between FP and the OB/GYN. In some circumstances, care will be transferred. In other circumstances, care may be **co-managed** In other circumstances, the OB/GYN will consult and care may remain with FP.

Obstetric Complications:

Incompetent Cervix	Chorioamnionitis
Preterm premature rupture of membranes	Preeclampsia/HELLP
Multiple gestation	GDMA2
Fetal malformations	Breech Presentation
Intrauterine growth restriction	Abnormal fetal heart rate
Oligohydramnios and polyhydramnios	Prolonged/abnormal labor
Prolapsed cord	Retained placenta
¾ degree tear	Severe postpartum hemorrhage
Operative delivery	< 36 weeks preterm labor or dilated
No prenatal care (send to OB/GYN)	≥ 35 years old maternal age

APPENDIX F. DISTANCE TO DELIVERING HOSPITALS

Distance to delivering hospital from **Ada:**

Fargo- 50 miles

Fosston – 56.8 miles

Detroit Lakes – 62 miles.

Distance to delivering hospital from **Twin Valley:**

Fargo - 58 miles

Fosston - 47-58 miles depending on route. (shortest to take hwy 32 to Fertile then take hwy 1)

Detroit Lakes – 47 miles

APPENDIX G. EVERGREEN PERINATAL EDUCATION EXCELLENCE IN CARE WITH THE TEN STEPS: LACTATION COURSE OBJECTIVES

1. Discuss the importance of hospital policies that support exclusive breastfeeding.
2. List the minimum requirements established for hospital staff breastfeeding education.
3. Describe barriers to effective communication with women about feeding their babies.
4. Discuss the effects of culture on breastfeeding outcomes.
5. Identify teaching points appropriate for prenatal classes and interactions with pregnant women.
6. List birthing routines that may influence breastfeeding success.
7. Discuss hospital birth policies and procedures that support exclusive breastfeeding
8. Discuss the rationale of skin to skin care for mother and baby
9. Describe the anatomy and physiology of lactation and the process of breastfeeding.
10. Describe how our care influences milk production
11. Describe the basic elements of correct positioning and latch
12. Perform a breastfeeding LATCH score
13. Identify the hallmarks of milk transfer and effective breastfeeding.
14. Identify the special needs of babies born too early
15. List ways for mothers to maximize breastmilk production
16. Describe the importance of human milk for human babies.
17. List possible negative effects of feeding babies breastmilk substitutes.
18. Discuss some marketing tactics used by commercial baby food industries.
19. Identify acceptable medical reasons for supplementation of breast fed babies.
20. Evaluate the current AAP recommendation about infant sleep.
21. List several possible responses when women request formula, nighttime nursery care.
22. Describe infant feeding cues.

23. Discuss ways to assist new mothers and their babies when early breastfeeding is challenging or difficult.

24. Discuss the rationale of restricting pacifier use in the early weeks of breastfeeding.

25. Describe management techniques for breast and nipple problems.

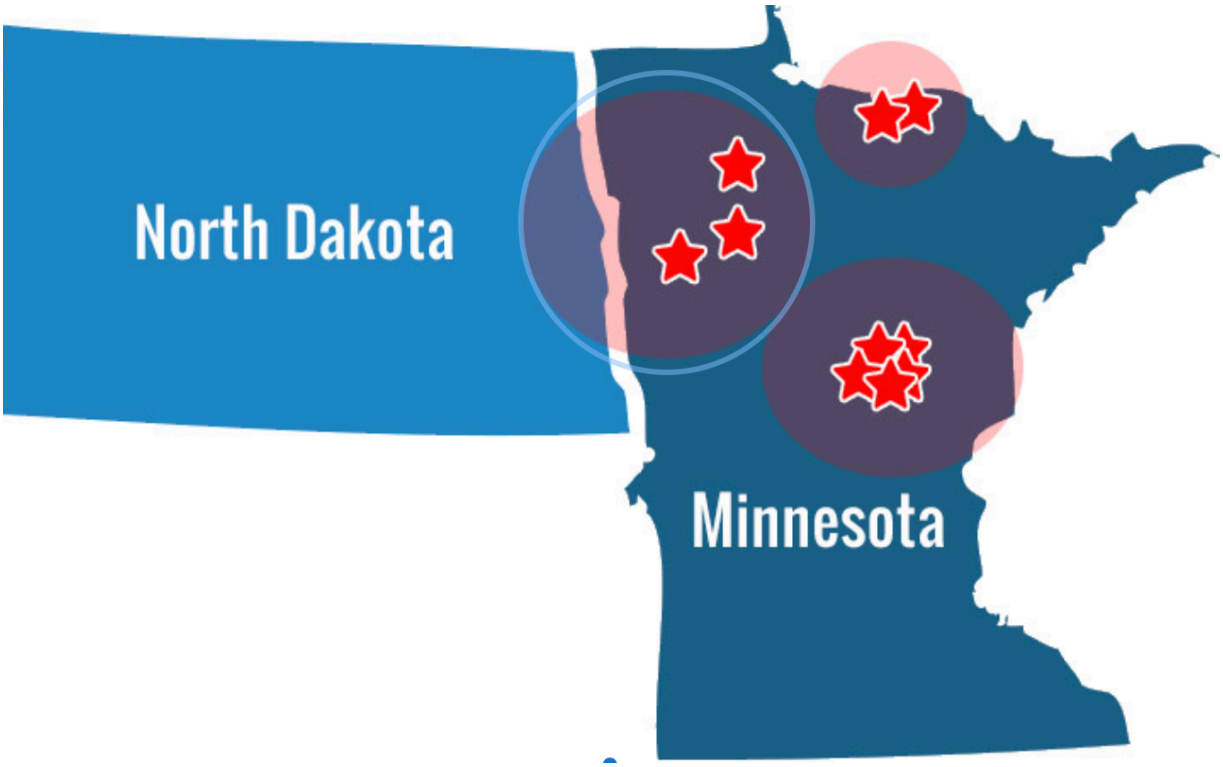
26. Develop a care plan to help a mother with nipple pain, engorgement, infection.

27. Discuss the importance of ongoing protection and support for mothers to continue breastfeeding beyond the early weeks.

28. Discuss the research that demonstrates the success of implementing the Ten Steps to Successful Breastfeeding.

29. Describe how "Best Practice" provides satisfaction for childbearing women and the professionals who care for them.

APPENDIX H. RADIO COVERAGE MAP



APPENDIX I. ESSENTIA HEALTH ADA FY 18-19 INITIATIVES

FY18-19 INITIATIVES – Ada

System	Essentia Health Ada	Ada Leader(s)
One Mission, One Essentia	**Implement Growth Strategies for service specific opportunities.** • Initiate Care Team concept in RHC. • Initiate public health partnership for family planning clinic. • Expand telehealth options- cardiology, nephrology, psychiatry • Expand OB program to include family practice providers from Fosston and RN ed program	**Dr. Lunde** **Erin Stoltman** **Heather Byron** **Kari Bergman**
	Pursue capabilities of leveraging technology to expand social media to increase awareness of One Essentia and Ada specific activities. • Community Events • Foundation Events • Employee Engagement • Job Postings	**Erin Stoltman**
Engaged & Inspired People	**Improve teamwork and communication between within the facility through weekly facility and safety huddles.**	**Erin Stoltman**
	Pursue advanced certifications and trainings for staff in core areas. • **Nursing- ER** • **EMS- intubations, new protocols**	**Kari Bergman** **Sue Halls**
	Develop and initiate Daisy Award nursing recognition program.	**Kari Bergman**

Zero Preventable Harm	**Strengthen campus-wide Infection Control program encompassing all stakeholder needs and meets required regulatory standards.**	**Danielle Aldrich** **Kari Bergman**
	Pursue facility planning analysis • CT upgrade • Call light system • Air control system • Flooring • ER/clinic privacy • Water safety regulations • Foundation wall/welcome area remodel DX rad upgrade Hem lab upgrade SMARTemp monitoring	**Loren Olson** **Erin Stoltman**
Achieve Health & Vitality with our Communities	**Develop Care Coordination Program to ensure continuity of care across the continuum.** • Implement regular IDT meetings to assess and evaluate high-risk populations and improve care coordination. • Measure Hospital and SNF Readmissions. • Monitor Home Health referrals and changes in volumes.	**Kelsey Borgen** **Heather Bryon** **Kay Toczek**
Achieve Mission-advancing Financial Performance	**Identify continuous opportunities for managing total cost of care** • Monitor financial reports. • Participate and/or provide ideas to reducing total cost of care	**All Admin, Managers and Supervisors**
	Assess and redesign organizational structure to improve operational efficiencies. • Altius Productivity Metrics • Provide additional staff training and education to meet regulatory requirements.	**All Admin, Managers and Supervisors**

APPENDIX J. NDSU IRB APPROVAL LETTER

NDSU NORTH DAKOTA STATE UNIVERSITY

June 20, 2018

Dr. Kara Falk
Nursing

Re: Your submission to the IRB: "Implementation of Prenatal Services in a Rural Clinic"

Co-Investigator(s) and Research Team: Kari Bergman

Thank you for your inquiry regarding your project. At this time, the IRB office has determined that the above-referenced protocol does not require Institutional Review Board approval or certification of exempt status because it does not fit the regulatory definition of 'research involving human subjects'.

Dept. of Health & Human Services regulations governing human subjects research (45CFR46, Protection of Human Subjects), defines 'research' as "…a systematic investigation, research development, testing and evaluation, designed to contribute to generalizable knowledge." These regulations also define a 'human subject' as "…a living individual about whom an investigator conducting research obtains (1) data through intervention or interaction with the individual, or (2) identifiable private information."

It was determined that your project does not require IRB approval (or a determination of exemption). After review of your protocol submission, you will not collect data through intervention or interaction, nor will you obtain identifiable private information as all data received will be in aggregate.

We appreciate your intention to abide by NDSU IRB policies and procedures, and thank you for your patience as the IRB Office has reviewed your study. Best wishes for a successful project!

Sincerely,

Kristy Shirley

Kristy Shirley, CIP; Research Compliance Administrator

For more information regarding IRB Office submissions and guidelines, please consult www.ndsu.edu/irb. This Institution has an approved FederalWide Assurance with the Department of Health and Human Services: FWA00002439.

APPENDIX K. ESSENTIA LETTER OF SUPPORT

June 11th, 2018

NDSU Institutional Review Board
NDSU Department 4000
PO BOX 6050
Fargo, ND 58108-6050

To whom it may concern:

This letter is granting permission to Kari Bergman, DNP student to use data for her project aimed at increasing access to prenatal care in the rural health clinic setting. Kari has permission to utilize reports generated from the electronic medical record to collect data regarding the number of prenatal visits in the clinic, and the number of patients served for her project implementation.

If you have any concerns or questions, please contact me at: 218-784-5214

Sincerely,

Erin Stoltman, PT
Administrator
Essentia Health Ada
Office: (218) 784-5214
Cell: (218) 280-3839
erin.stoltman@essentiahealth.org

APPENDIX L. EXECUTIVE SUMMARY

Background

Positive birth outcomes stems largely from having adequate prenatal care. With adequate prenatal care, mothers are at lower risk for preterm labor, precipitous deliveries, and low birthweight babies (Martin, 2012). While accessing adequate prenatal is not a challenge for most women residing in urban areas; women who reside in rural areas face a disadvantage accessing care due to geographical disparities. Besides the geographical constraints, women who reside in rural areas are on average poorer, less likely to be insured, and less educated than women residing in urban areas (Epstein, Grant, Schiff, & Kasehagen, 2009).

Due to lack of prenatal care in rural areas, this project aims at implementing evidence based prenatal care guidelines in a Rural Health Clinic (RHC) for family practice providers to provide prenatal care in the rural setting, with collaboration from OBGYN providers at urban hospitals. Through structured prenatal guidelines and visit sequences decided on by the collaborating delivering provider, women in rural areas can have improved access to prenatal care. Not only will the addition of prenatal care services at the RHC increase access to care, it can also potentially increase the RHC's service line leading to increased revenue.

Objectives

The purpose of this project is to improve access to high quality prenatal care in a rural Minnesota community. Successful prenatal care implementation weighs heavily on staff education. The three objectives for this project include:

- Objective 1. The first objective was to implement clinician and nurse education regarding best practice in prenatal care.

- Objective 2. The second objective was to develop a collaboration with delivering providers at hospitals with inpatient labor and delivery units.
- Objective 3. The final objective was to implement and evaluate lactation resources.

Project Design

The Plan-Do-Study-Act (PDSA) model for improvement was used to guide this project through its entirety. Through utilization of the PDSA cycle, provider and nursing education was planned and delivered to the RHC staff. While the RHC will provide prenatal care, it does not have the capacity to deliver babies, so collaboration with three facilities within a 70 mile radius of the RHC was completed; and the pregnant females will be referred to the birthing center of their choice.

Results

Successful development and implementation of prenatal guidelines were established at the RHC. Along with the prenatal guidelines, a list of pregnancy related conditions in which the family practice provider at the RHC must refer for further management was adopted by the Essentia perinatal medical group. Staff education completion rates ended up being 100% for the nursing and medical provider staff at the RHC. Though this project desired to implement a lactation program within the RHC, staff training constraints became a limitation. However, with not having a successful lactation program being developed through this project, a partnership with public health became a more feasible way of getting women lactation support if needed. Prenatal visits were monitored during the first five months of the implementation period, during that time the RHC completed seven initial prenatal visits, but all of those patients were subsequently referred to OBGYN and were not managed by the RHC.

Conclusion

Through the practice improvement project, development of evidence-based guidelines that would fit into the RHC's practice model and scope were developed and implemented. As a result of this; the RHC is prepared to provide high quality prenatal care to the residents in the rural Minnesota community in which it serves. Although the prenatal care can be provided at the RHC, the delivery of the baby will occur at a hospital with an inpatient labor and delivery unit in which the RHC has partnered with on this project.

Keywords: women, prenatal care, lactation, rural, RHC, Minnesota