Chronic Care of Diabetes in the Rural Setting: A Quality Improvement Project

Sandra Jane Boone

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Entitled: *Chronic Care of Diabetes in the Rural Setting: A Quality Improvement Project*

has been approved as meeting the requirement for the Degree of Doctor of Nursing Practice in College of Natural and Health Sciences, School of Nursing, Program of Nursing Practice.

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ABSTRACT


Diabetes is a national health care concern that costs the health care system approximately $245 billion per year. The prevalence of diagnosed diabetes has increased 157% in Colorado. As a part of the Affordable Care Act, accountable care organizations (ACO) were developed to help manage the chronic care of diabetes. The purpose of ACOs is to improve outcomes and decrease overall costs. Banner Health is a participating ACO and has clinics in six of the Northeast Colorado counties. Three counties in which Banner has clinics have a disproportionately higher incidence of diabetes compared to the rest of the state. As a means to meet ACO standards, Banner has developed a strategic initiative O1.5. Under this strategic initiative, Banner Health clinics will strive to improve the number of diabetic patients with current A1C measurements and glycemic control of an A1C <9%. This quality improvement project was designed to use Delphi method and the Plan-Do-Study-Act cycle to improve documentation of diabetes-specific metrics. Data obtained prior to intervention were used to establish baseline reporting of A1C in Morgan County clinics. Data revealed that in adults 18-75, 78.2% of patients in the clinics were at A1C control of 9% or lower. A RE-AIM assessment was done to identify areas for improvement; the greatest areas of improvement were in EHR utilization and in process flow. A Delphi method study was
used to identify practice change guidelines. For this quality improvement project, the Doctor of Nursing Practice student focused on the documentation and specific process flow to improve the number of patients meeting the chronic care of diabetes initiative goals of having an A1C <9% and current diabetes care within the past year.

Keywords: Diabetes, rural health clinic chronic care.
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<td>Glycosylated Hemoglobin A1C</td>
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<td>ACA</td>
<td>Affordable Care Act</td>
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<td>ACE</td>
<td>American College of Endocrinology</td>
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<td>ADA</td>
<td>American Diabetes Association</td>
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<td>ACO</td>
<td>Accountable Care Organization</td>
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<td>Banner Medical Group</td>
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<td>CMS</td>
<td>Centers for Medicare Services</td>
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<td>CRCCD</td>
<td>Care Reliability for Chronic Care of Diabetes</td>
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<td>DMST</td>
<td>Diabetes Self-Management Training</td>
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<td>DNP</td>
<td>Doctorate of Nursing Practice</td>
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<td>EHR</td>
<td>Electronic Health Record</td>
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<td>LPN</td>
<td>Licensed Practical Nurse</td>
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CHAPTER I

BACKGROUND AND SIGNIFICANCE

Diabetes is common; an estimated 29.1 million Americans have diabetes (9.3% of the population) and 86 million (37% of the population) have prediabetes (American Diabetes Association [ADA], 2015). In 2007, approximately 54 million persons had been diagnosed with pre-diabetes; that number rose to 79 million in 2011 (Centers for Disease Control and Prevention [CDC], 2014). Pre-diabetes is a predictor of the grave problem facing our healthcare system. Approximately two thirds of people with pre-diabetes will likely develop diabetes within six years and will need treatment to prevent the potential complications of diabetes. In 2012, the total cost of care for diabetes was $245 billion; contributing to those costs were care of complications and co-morbidities (ADA, 2015). Approximately one out every five healthcare dollars is spent on diabetes related costs, the risk of death is 50% higher in people with diabetes, and the medical costs are twice as high for diabetics than for those without diabetes (CDC, 2014). Under section 4108 of the Affordable Care Act, increased reimbursement is available for clinics that improve management of diabetes (Center for Health Care Strategies, Inc., 2011). A review of the literature discusses accountable care organization (ACO) standards, the current evidence-based practice, and issues facing providers striving to meet those targets.

Colorado as a whole has a lower incidence of diabetes compared to the rest of the nation; only 7.4% of the overall state has diabetes but the incidences are
disproportionately higher in rural communities (Colorado Department of Public Health & Environment [CDPHE], 2013). For example, communities along the Front Range have a 3 to 5% prevalence rate of diabetes, whereas rural communities have a 7.8 to 13.2% prevalence rate. The “prevalence of diagnosed diabetes has increased 157% from 4.7% to 7.4% in the past decade” (CDPHE, 2013, p. 1). Another interesting factor was 91% of adults with diabetes had other chronic health conditions--50% of people with diabetes were obese, 65% had high blood pressure, and 62% had high cholesterol (CDPHE, 2013, p. 3). In Colorado, the leading co-morbid factors for individuals with diabetes are obesity, depression, cardiovascular disease, tooth and gum disease, eye disease, kidney disease, and stroke (CDPHE, 2013). A diabetes prevalence graph is provided in Appendix A.

Banner Health (Banner) is one of the major health systems available in northeast Colorado with hospitals in four of the northeast counties and clinics in five of the northeast counties. Banner provides medical care in Arizona, Colorado, Nebraska, Wyoming, Nevada, California, and Alaska. Banner is one of the largest nonprofit hospital systems in the country, serving more than four million participants (Banner Health, 2016a). With Banner’s large patient population, they are invested in improving healthcare outcomes and reducing costs (Banner Health, 2016a).

Banner has developed an operational, strategic initiative to improve care reliability for chronic care of diabetes (CRCCD) in Banner Medical Group (BMG) clinics (Banner Health, 2015). The initiative objective under operations 1.5 (O1.5) is to measure a “percentage achievement in process performance metrics” across all Banner clinics.
(Banner Health, 2015, p. 66). The purpose is to improve the health of the diabetic population, increase the quality of life, and decrease overall healthcare utilization.

The background on developing this CRCCD initiative was Banner clinic’s participation as an accountable care organization (ACO) and part of recent government healthcare changes. In Colorado, at least three clinics are in a disproportionately higher area of diabetes prevalence. Their setting due to this higher diabetes prevalence means they have a higher percentage of patients who meet criteria for the ACO metrics compared to other clinics in the Colorado Banner system. All Banner clinics provide care to Medicaid and Medicare population, which is the population measured for success in an ACO. One of the ACO measures of success is improvement in chronic care management, which applies to all patients served in the clinics whether they participate in Medicare, commercial insurance, or private-pay insurance programs. For the purpose of this initiative, the endpoints measured were diabetes control—an A1C (glycosylated hemoglobin A1C) less than 9% and current A1C in the past 12 months. Reported A1C control was 78.2% at the beginning of the capstone project. The target goal was to improve A1C compliance to 94% overall; a reverse order measure for the A1C of less than 9% had a goal of 80% of the diabetic population with an A1C less than 9%. This initiative supported the Centers for Medicare and Medicaid Services’ ACO--36 standards of quality performance to prevent all-cause unplanned admissions for patients with diabetes and domain 2.3 addressing the at-risk population of diabetes measures (Centers for Medicare and Medicaid Services [CMS], 2015). The ACO standards are made with evidence that providing consistent, quality care helps contain costs and are associated with decreased overall all-cause hospital admissions (CMS, 2015). Meeting this
initiative improves reimbursement for clinics that participate in fee-for-service and share savings programs.

The CRCCD was supported by Banner corporate management. Because the purpose of this initiative was to improve quality care, no capital purchases were required; this was not a value-based purchasing metric. This initiative sought to improve utilization of the existing electronic health record programs, use of existing printed Banner-specific materials, and existing evidence-based treatment guidelines for diabetes.

The target population in the BMG clinics was patients 18 to 75 years who had either Type 1 or Type 2 diabetes and presented to the clinic for ambulatory care. The target population also included anyone with comorbid codes such as diabetic retinopathy, neuropathy, or nephropathy. Exclusion criteria were participants in intensive ambulatory care or iCare, women with a diagnosis of polycystic ovary syndrome, gestational diabetes, or individuals with steroid induced diabetes. Providers who were hired after December 31 were not included in following years’ data collection metric.

In review, the initiative was care reliability or chronic care of diabetes. The background was to improve the overall health of the diabetic population. Evidence to support the need for this initiative was derived from the Centers for Medicare and Medicaid Services (2015), the Centers for Disease Control (2014), and the American Diabetes Association (2016). The initiative was financed by Banner management at the corporate level. The target population was adults between 18 and 75 years of age with a diabetes diagnosis or diabetes-related diagnosis. Data to support this initiative were obtained from ACO guidelines and existing clinic performance. The healthcare gap this initiative sought to improve was the chronic care of diabetes. The expected outcome was
94% or more of all the clinic's diabetic population would have both an A1C current in the past one year and 80% of the diabetic population would have less than 9% A1C. The benchmarks were derived from ADA (2016) diabetes care guidelines and were congruent with Banner (2016b) practice guidelines. This initiative would fulfill guidelines set forth by CMS and the ACO. The CRCCD initiative was part of an ongoing quality improvement measure. Meeting target for this measure was intended to help decrease 30 day readmissions and unnecessary hospitalizations due to complications from diabetes.

“Research shows that effective health care can lower the risk of admission for patients with diabetes” (CMS, 2015, p. 19). A study completed by Brown, Peikes, Peterson, Schore, and Razafindrakoto (2012) demonstrated frequent contact and use of evidence-based education and treatment decreased hospital admissions when used in an ACO setting. A systematic review done by Leong et al. (2012) also supported the use of diabetes control measures to decrease hospital admissions. The success of this initiative was measured by an internal review board.

**Research Question and Problem Statement**

The following research question guided this study:

Q1 What impact will focused diabetes documentation education and process flow by a DNP student, using the Delphi technique, have on the ability of providers to improve the number of patients meeting the chronic care of diabetes initiative goals of having and A1C <9% and current diabetes care within the past year?

To answer this research question, the following problem statement was developed:

**Patient problem or population**--Providers and diabetic patients in rural health clinic,

**Intervention**--Chronic care of diabetes initiative with Doctor of Nursing Practice (DNP) student involvement using the Delphi technique, **Comparison**--Prior to student
intervention, and Outcome--Patients who meet the goal of A1C <9% and current care in past one year (PICO).

**Assessment**

The Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) tool was developed by Glasgow, Vogt, and Boles (2015) as a framework for thought on key issues while planning an intervention. Each question on the RE-AIM tool is scored on a 0 to 10 scale with 0 being Not at all confident, and 10 being Completely confident. The results help identify and quantify or prioritize areas that need attention with the lowest scores needing the most attention. The RE-AIM tool was used to evaluate areas of need in the rural health setting with regard to implementing and adhering to the CRCCD.

**Reach**

For the purpose of the CRCCD, the reach of the target population was limited to patients with diabetes or diabetes-related diagnosis in a Banner clinic with a provider practicing as of December 31, 2014. If a provider left the practice during this timeframe, patients who were under that provider for primary care were no longer counted in the end metric until they established care with a new primary care provider. The target population was adults ages 18 to 75; ethnicity was not specified but certain overall clinics had higher populations of different ethnic groups. Similarly, depending on geographic location, the clinic would have a different sampling of patients from different socioeconomic backgrounds, certain clinics would have more self-insured individuals, and certain clinics would have more Medicaid or Medicare patients. Because this initiative was limited to the clinic setting, the confidence it would attract members of the
target population was a nine as most patients would continue to seek care although some would still wait until there was problem before they came in for a follow-up visit.

There were several barriers to the reach of this initiative--one of the largest was an appropriate use of the electronic health record (EHR). Through clinical observation of three separate clinics, many providers were not using the EHR to its optimum potential and were not using the tools built in to help remind them what tests were due or ordering the correct test at the correct time. To add to the EHR conundrum, not all clinics were using the same EHR interface. However, there were plans to phase every clinic to Cerner Ambulatory over the next year; at the time of this assessment, the rural health clinic would transition in February 2016.

Another barrier in rural areas was provider turnover. Nurse practitioners and physician’s assistants had been very consistent in rural areas over the years; three of them had been in practice in the community for more than 15 years but physicians were harder to retain. Many physicians came to rural areas at the end of their careers hoping for a slower pace or young physicians came to launch their career to prepare for a different location five years down the road. Patient compliance was yet another barrier. Many patients in rural areas only sought care when they noticed a problem affecting their daily life or when they thought care should be due. Many patients were reluctant to have routine testing done if they perceived their condition to be in control or if additional costs were involved (Nam, Chesla, Stotts, Kroon, & Janson, 2011).

Strategies to overcome the perceived barriers could be aimed at management oversight, EHR utilization, and patient empowerment. To address the EHR barrier, there must be several interventions: first, elbow support needs to be provided to providers so
they can use the full functionality of their current EHR. Second, when the new EHR is rolled out, a specific session should be dedicated to functionality that would help providers achieve initiative metrics. Third, after the system has been in place for four to six weeks, elbow support should come in and revisit any special forms. Management would be tasked with addressing the provider shortage. Unfortunately, there is not much providers who are left behind can do to address patients who fall out of the metric when their provider leaves other than continue to treat them until they are established with the new provider (this has been averaging over six months). However, if providers use the full functionality of the EHR, automatic reminders for testing and follow-up visits should be in place.

Efforts to address patient compliance have been aimed at recapturing patients who have not had visits within one year. Contact has been made by phone call or written letter if unable to reach by phone. The letter informs patients of the American Diabetes Association guidelines for frequency testing (L. Atwater, Personal interview, January 19, 2016). The confidence for overcoming these barriers over the three months was about a six. The rural health clinic transitioned EHRs in February 2016. After this transition, utilization was revisited and careful attention was given to patients who might not have been seen for more than one year.

Effectiveness

When evaluating ways to improve the effectiveness of the CRCCD initiative, it was important to remember this initiative was not asking providers to do any new or different treatment but rather consistently provide the standard of care. The CRCCD initiative was evidence-based using guidelines from the American Diabetes Association
This initiative was important because diabetes and comorbidities from diabetes affect a large population of those seeking primary care (Pollack, Weissman, Lemke, Hussey, & Weiner, 2013). From a business perspective, the stakeholders were in agreement with this initiative. Providing the standard of care for diabetic patients was the right thing to do. The struggle was providers did not like having their choices in the payment rates dictated by their compliance. The measurable outcomes of this initiative were A1C less than 9% and current testing within six months to one year. Other measurable objectives were centered on the transition to the new EHR. One of the unintended consequences that could result from the implementation of this initiative was providers might feel disproportionately stressed about the performance outcomes (Shanafelt et al., 2016). The stress came from the number of noncompliant patients. There were discussions about if reimbursement was tied to outcomes, patients might be fired from clinics for non-adherence to standard treatment plans. Most Banner Health Clinics had no refusal policy for chronic illness, which could result in higher incidence of inheriting some of the most difficult patients from other clinics. Which transitions to the next point, will this intervention be successful across all subgroups? The most difficult subgroups were those without adequate insurance coverage and those in high-deductible programs. These patients paid their monthly premiums and were responsible for out of pocket deductibles—sometimes more than $7,000. Those patients with inadequate insurance coverage are most likely to fail in getting timely care due to financial constraints. The confidence rate regarding the effectiveness of the CRCCD initiative was about a seven.
Adoption

Adoption of the CRCCD initiative throughout Banner was 100%. If the Banner clinics was to continue to receive the highest reimbursement rates, they would strive to maintain consistent outcomes in at-risk populations. The confidence rate for the adoption of the diabetic initiative was estimated to be around nine. There would likely remain some providers and some patients who would challenge the frequency guidelines.

Implementation

Implementing the CRCCD initiative was already underway. The confidence this initiative could be consistently delivered as intended was around six. However, when all clinics were on the same EHR, it was anticipated this number would increase. Confidence the CRCCD program could be delivered by the staff representing all skills and expertise was about an eight once the remaining clinics converted. Electronic health records had been established in this clinical setting long enough that most of the providers were becoming more comfortable with their use. There was not much flexibility in the measured outcomes of A1C control and follow-up timeframe because these were congruent with national guidelines (ADA, 2016). It was anticipated there would be some lag in data collection when the clinics changed EHRs.

One struggle was the EHR automatically included any diabetes-related diagnosis. Including any diabetes-related diagnosis meant if a provider wanted to diagnose a patient with neuropathy but accidentally selected diabetic neuropathy, the system would look for a current A1C. With the transition from the ninth edition of International Classification of Diseases (ICD; 2009) to ICD-10 recently and the transition to the new EHR, many imported records needed to be individually reviewed for accuracy of diagnosis.
Maintenance

Maintenance of the CRCCD initiative was twofold: the providers who would use the EHR to help facilitate consistent diabetic care and the receptiveness of patients to the recommended guidelines. It has been well researched that complications from diabetes are reduced when A1C is less than 9% and patients living with a chronic condition like diabetes are evaluated every six months (ADA, 2016). The confidence this program would produce lasting benefits for this patient population was a 10. This initiative did not propose any new or unreasonably expensive treatments. The plan to support initial success was to help providers navigate the full functionality of their EHR and educate patients on their standard of care. Resources available to the patients in northeast Colorado included printed materials, consultation with a registered dietitian, and access to an American Diabetes Association-recognized diabetes program (Banner Health, 2016b).

Theoretical Framework

The experiencing transitions theory was appropriate to the current rural health clinic (RHC) setting (Meleis, Swyer, Im, & Massias, 2000). The experiencing transitions theory encompassed the nature of transitions, transition conditions, facilitators and inhibitors, and patterns of response. Many areas of change were occurring--provider turnover, new EHR, data collection methods, and goal expectations. Because so many areas were in transition, an appropriate area to focus on was interventions and adjustment strategies. In alignment with the experiencing transitions theory, the transitions were occurring at the situational and organizational level; the patterns were most often multiple, simultaneous, and related; and the properties encompassed all the topics listed
in the theory. The purpose of this project was to facilitate the transition and meet diabetes-specific targets. Expected long range outcomes were increased interaction and increased confidence.

The awareness to adherence model by Pathman, Konrad, Freed, and Freeman (1996) is also an excellent theoretical model to display the transition of personal practice to guideline-based practice. This model provides a visual guideline to how most providers work though putting a guideline into practice. Initially, the providers need to be made aware of the guideline or practice measure expectations. Since the glycemic goals and frequency of testing are not new information but rather the expectation of meeting the defined targets is new, providers need to be aware of the expectations and the reasoning behind why they are being implemented as a hard target. The agreement is where the providers have an opportunity to agree with the guidelines and voice any concerns about the guideline. If providers do not agree with the guidelines and expectations, they often become frozen and do not advance to adoption. Ideally, adoption is when providers move past adhering to the guidelines out of expectation and practice them out of knowledge of what is best for their patients. Adherence is when providers have the knowledge, attitudes, and behaviors congruent with maintaining diabetes care guidelines. The purpose of using this theoretical model in the chronic care of diabetes is to provide a framework for incorporating the established guidelines and the new electronic health record.
Literature Review and Synthesis

A literature review was performed using CINAL, PubMed, Ovid, and Cochrane Review. Key search terms included chronic care of diabetes, glycemic control, accountable care organization and diabetes, rural health diabetes, and diabetes guidelines. A brief review of ACOs was done to understand better how the chronic care of diabetes contributed to the overall success of the Affordable Care Act. Due to the quality improvement angle of this project, a literature review was focused on understanding the guidelines and strategies to meet the guidelines in a rural health setting. Searches were limited to the English language and published since 2011. Practice guidelines from the American Diabetes Association (2016) and consensus statements from the American College of Endocrinology (Garber et al., 2016) were reviewed. Initially, 40 articles were selected for further review; articles that were not applicable to the rural health setting or current guidelines were excluded. Twenty-three articles were selected for use in this project: four systematic reviews; 13 general practice articles that included randomized control trials, cross-sectional studies, and retrospective studies; and six articles that focused on rural or minority diabetes care.

The Affordable Care Act set forth ACOs as a voluntary means for healthcare organizations to promote efficient service delivery, reduce expenditures, and improve health outcomes (Burke, 2011). It was estimated that for every 1% drop in A1C, approximately $820 of cost was avoided; these cost savings were why ACOs were encouraged to better manage chronic illness (Cauthon et al., 2015). Many commercial insurance programs follow ACO standards as they show effective use of funds. The use of health information technology such as EHRs allows organizations to communicate
data in real time once the data structure for extraction and reporting has been put into place. Reported data tie into the payment and delivery system of the ACO, displaying how well an organization is doing at managing chronic illness. Banner (2016b) has chosen to participate as an ACO because they are working at ensuring a patient experience that is highly coordinated. One of the capabilities of the ACO is to depart from the older fee-for-service healthcare model and transition to a wellness model that rewards providers who appropriately manage chronic care. The principle duties of an ACO are to

1. be willing to become accountable for the quality, cost, and overall care of a defined population of Medicare fee-for-service beneficiaries;  
2. agree to participate in the program for at least three years;  
3. have a formal legal structure allowing it to receive and distribute payments for shared savings;  
4. have in place leadership and management structures that include clinical and administrative oversight systems;  
5. have a network of providers that includes enough primary care professionals to cover the Medicare beneficiaries assigned to it;  
6. demonstrate to the Secretary of HHS that it meets patient-centeredness criteria for these beneficiaries; and  
7. define processes to promote evidence-based medicine and patient engagement. (Burke, 2011, p. 876)

**Diabetes Definition and Guidelines**

The American Diabetes Association (2016) is the standard for measuring appropriate care and treatment of diabetes used by a diabetes education program within an affiliated hospital. While the target A1C for glycemic control is 7% or less for most non-pregnant adults, the goal could be individualized for those at higher risk of complications. According to the ADA (2016), A1C goals of less than 8% are more reasonable for individuals with hypoglycemia and other drug interactions, disease duration, life expectancy, other comorbidities, vascular comorbidities, patient attitude and expected treatment efforts, resources, and support system. The American College of Endocrinology (ACE; Garber et al., 2016) set more stringent goals for glycemic control,
recommending a target of 6.5% for healthy adults in the absence of serious concurrent illness or risk for hypoglycemia. An A1C of 9% or above was representative of poor control for both the ADA and the ACE and represented the decision point at which insulin should be considered.

The frequency of testing an individual’s A1C is based on his/her current diabetes control and individual needs. It is recommended all individuals living with diabetes have an A1C monitored every six months if well controlled (ADA, 2016). Individuals who have poor control or are adjusting treatment should have an A1C monitored every three months (ADA, 2016).

A study done by Parcero, Yaeger, and Bienkowski (2011) showed patients in primary care practice who adhered to the ADA testing guideline for the frequency of testing had better control of their diabetes than those who did not. It was important to note the role of primary care in the management of chronic diabetes; while it could be tempting to refer more advanced patients to a specialist for care, it might not improve outcomes. A study done by Zgibor et al. (2011) demonstrated that patients who lived within 10 miles of their diabetes care center were 2.5 times more likely to have improved their A1C levels.

The appropriate use of nursing and advanced practice nurses has also shown to improve compliance with A1C testing and improve glycemic control. A study done by Vetter-Smith (2012) demonstrated clinics that facilitated nurse participation in the workflow for diabetes management had more successful integration; per this study, Licensed Practical Nurses were used as nurse partners. The use of nurse partners improved the frequency of blood glucose measurement and glycated hemoglobin levels
A review of team-based care revealed physician assistants (PA) and nurse practitioners (NP) had a higher proportion of Medicare/Medicaid patients than their physician counterparts and saw more socially complex patients when defined according to poverty levels, disability, and other comorbidities (Everett et al., 2013). Data reviewed in this study were similar to the division of patients in the rural health clinic. As a result of provider turnover, a majority of diabetic patients have had some, if not all, of their diabetes management provided by a PA or NP. According to the 2016 ADA Diabetes Care Guidelines, optimal diabetes management occurs when primary care providers take a “holistic approach in providing care” (p. 23). In a study done in the United Kingdom, nurse practitioners responded positively to patient cues and provided a more holistic approach 75% of the time compared to 53% of the time with general practitioners (Riley et al., 2013).

Collaborative care within a practice is also important in improving chronic illness care. When a collaborative approach to care is used by allowing cross-consultation with specialists and case managers, larger glycemic improvements are seen compared to the usual care group (Cauthon et al., 2015). Collaborative care is often used in the rural setting due to limitations of travel, time, and availability of endocrinologists. The rural approach in Morgan County was to utilize other clinical providers and refer for diabetes self-management training, medical nutrition therapy, and consultation with endocrinology that is usually managed by primary care. One concern was providers were under increasing pressure to limit the amount of time spent during a patient encounter (Cauthon et al., 2015). This further supported the need for a collaborative approach with the resources available. In an evaluation done of Veterans Affairs’ management of diabetes,
high performing clinics used a collaborative approach with “registries, delivery system design, and the use of a team prepared for the patient visit” (Kirsh et al., 2012, p. 237).

One strategy to improve A1C testing compliance is point of care (POC) A1C testing. At the time of the project, POC testing for A1C was not available in Morgan County clinics. With the frequency of A1C monitoring being one of the metrics under ACO Part 27, it was important for clinics to develop a plan to monitor diabetic patients in a timely manner (Burke, 2011). Utilizing a POC A1C test, Egbunike and Gerard (2013) were able to improve A1C testing compliance from 78% to 82.9%-95% by having a documented A1C in the respective clinics. Using a POC A1C test fit within the chronic care model by improving the healthcare delivery system design and decision support. Use of POC testing also improved provider adherence to ADA (2016) standards of care as it was easier to obtain an A1C while the patient was present and they recognized one was needed. More importantly, they could discuss the results with the patient without a delay in information (Egbunike & Gerard, 2013).
CHAPTER II

PROJECT OBJECTIVES

This project centered on process flow of documentation in the electronic health record (EHR) and appropriate use of resources for patients with diabetes. Due to the transition to the new EHR, there was a great need to develop the process of updating records. There was also a need to further identify how data were collected, the process of documenting in the correct areas of the chart, and which individuals would be most appropriate to initiate the process. Accurately capturing and reporting data helps the clinics meet the system goals and the goals set forth by the ACO.

Objective one was to understand what parts of the EHR contributed to the collection of data and where to document them in the EHR to eliminate unnecessary duplication. Objective two was to understand who was capable of providing documentation to meet the metric and where the best utilization of resources would be to get complete documentation. The third objective was to ensure providers were aware of the measures, expectations, and reasoning behind them. The provider understanding was reserved as one of the later objectives due to the nature of this metric not being a change in practice or guideline; rather, the metric was a change in adherence expectation.

Without a thorough knowledge of the EHR and the appropriate contributors, providers might become frustrated with the expectations.
**Evidence-Based Project/Intervention Plan**

The Stetler (1985) model of research into practice was used to guide the implementation of the CRCCD. The Stetler model focuses on six phases for implementing evidence-based practice: preparation, validation, comparative evaluation, decision making, translation and application, and evaluation (Stetler, 1985). A Delphi process was used to identify current practice, barriers, and solutions to using EHR tools to document diabetes care. Delphi studies allow a process to use a multidisciplinary consensus to establish solutions specific to the environment in which they are being used (Carratalá-Munuera, Gil-Guillen, Orozco-Beltran, Navarro-Pérez, & Caballero-Martínez, 2013). Although a traditional sample size of 15-20 expert participants would be optimal, due to the limited sample available, a smaller selection of experts was used in this Delphi study (Hsu & Sandford, 2007). Criteria set forth by Adler and Ziglio (1996) were used in the selection of an expert: subject matter knowledge and experience, ability and readiness to be a participant in the study, adequate time to spend on the study, and effective at communicating issues. A Delphi study consisting of at least two rounds was used to further evaluate the current climate of change, the barriers to successful use of the ACO tool in Cerner, and a practice consensus to guide future use (Powell, 2003).

**Data Collection**

Congruent with Stetler’s (1985) preparation and validation phases, data for evaluation of provider usage of the diabetes ACO measures were obtained from chart abstraction of 5 to 10 diabetes patients per eligible provider who had a diabetes visit between March 1, 2016, and June 30, 2016. Charts were reviewed for the use of the diabetes section of the ACO tool and for following current evidence-based guidelines.
with or without use of the ACO tool. A repeat abstraction of charts was repeated in
November to compare the use of the ACO tool from the time of intervention. A Delphi
technique was used to guide interventions and practice guidelines specific to the rural
area. The first phase of the Delphi study utilized open-ended questions (see Appendix B).
The second phase of the Delphi study used answers obtained from current users and
identified needs of staff not currently using the ACO tool to its full potential. It was
anticipated that use of the Delphi study would also enhance provider participation in the
ACO metric and improve buy-in by staff.

**Delphi Round One**

Delphi round one assessed current usage of the ACO tool, assessment of
expectations by providers and MA staff, and perceived barriers (see Appendix B). The
first round survey was sent to western region Cerner support staff, providers identified as
currently using some portion of the ACO tool, and considered local experts and their
associated MAs. Return of the survey by the participants was considered as consent to
participate in the Delphi study as a no-signature consent was attached to the survey. Data
gathered from the first round of Delphi study determined the focus of education and
interventions for the second round of the Delphi study.

**Delphi Round Two**

Based on the responses garnered from the expert panel in the first round of the
Delphi study, a second round was developed. The second Delphi survey was sent to all
providers and MAs working in the Morgan County clinics to provide further consensus
and drive practice guidelines (see Appendix C). The findings of the Delphi study were
shared with participants so they could comment on the group findings. Practice change guidelines were based on the Delphi study results.

**Project Design**

This project was centered around a non-experimental study approach. Delphi survey data were used to query a panel of local experts currently using the ACO tool. The Delphi process included two rounds of evaluation sent to a group of panelists. The panelists were selected based on providers currently eligible to be included in the clinic data reporting. The goal of the Delphi study was to identify needs and develop a consensus for the rural health clinic.

Due to the rural setting of the health clinic, a limited number of participants was eligible for this quality improvement project. As of January 1, 2017, there were three physicians and two PA’s eligible at the rural health clinic (RHC) location. Providers available for the Morgan County analysis were five physicians, two PAs, and one NP. However, at the time of evaluation, only two physicians were available at the RHC location due to provider turnover. To provide more expert qualitative data, MAs associated with the providers and Cerner support staff were used.

According to Cerner EHR documentation education, MAs, nurses, and providers were all capable of documenting in the health maintenance section where the data for the ACO were generated. Providers were responsible for documenting the plan of care in each health maintenance section. In accordance with the adherence model, providers and other staff needed to be aware of who could document information, how often the health maintenance section should be updated, what areas of the chart communicated with those sections, and what was needed to satisfy the metric.
A one day provider-specific training on Cerner was completed on February 9, 2016 for all family practice providers and on February 11 for providers who provided obstetric care. The Cerner adoption coaches also met with each individual provider to help set up personal preferences. The adoption coaches were present for the first two weeks of adoption and returned to evaluate the effectiveness and address further issues six weeks post-adoption. This researcher was present for the training of both family practice and obstetrical providers and was also present for the adoption coach rounding. Due to this researcher's experience of being a Cerner super user on the hospital side, support was provided for the MAs and providers as the diabetes health maintenance sections were brought online.

Figure 1 provides a visual of the flow process for non-provider documentation of diabetes metrics. Following the outlined workflow, the nurse or MA contacted patients by phone or letter if any of the ACO27 measures had not been fulfilled. Either a nurse or MA documented any current information that could be gathered by phone and placed an order for A1C if no current A1C was on file. Patients who had a current A1C on file but were above 9% were scheduled for a diabetes follow-up visit during which the provider addressed a plan of care. Orders for follow up labs were also placed at this appointment.
Figure 1. Process flow for non-provider documentation of diabetes metrics.

Congruence of Organization’s Strategic Plan to Project

Banner has set targets for the ACO: Part 27--having less than 20% of the clinic population with an A1C >9% and 94% compliance for A1C monitoring. As previously mentioned, the clinics were not at target for A1C monitoring due to provider turnover, personal provider practices, and patient compliance. These targets represented Banner’s (2016b) desire to comply with established diabetes care guidelines (ADA, 2016). This
researcher has maintained communication with the practice manager for the Banner Medical Clinics in Morgan County (see Statement of Mutual Agreement in Appendix D).

**Timeline of Project Phases**

- January 2016--meet with clinic manager for applicability of project in the RHC setting, initial data gathering for baseline data.
- February 2016--electronic health record training and capstone committee selection
- April 2016--CITI training complete
- October 2016--Proposal
- November, 2016—Approval by Institutional Review Board (see Appendix E) to conduct Delphi study
- Spring 2017--Evaluate, analyze and quantify data. Dissemination of findings with staff.

**Use of Resources**

The researcher’s time and knowledge were the primary resources used for this capstone project. This researcher was able to attend Cerner provider training along with current clinic physicians. The researcher's time to go to provider training and work alongside providers to find more efficient ways of documenting the required information was the largest amount of work. Attendance at monthly clinical performance meetings was how the information about the ACO measures and the clinic's current standing on those measures were gathered. Data available to the researcher were the same data reported. E-mail was used to facilitate communication between the practice manager, the researcher, the providers, and the MAs. Dissemination of findings was planned for a
provider staff meeting and with the MA group. Banner has developed a strategic
initiative educational PowerPoint. Diabetes-specific slides from this PowerPoint were
used to facilitate documentation standards.

Analysis

Adhering to established guidelines set forth by the ADA (2016), ACE (Garber et
al., 2016), and CMS (2015), this quality improvement project facilitates better data
reporting and provider engagement. Diabetes is a common chronic problem that has a
significant impact on the financial management of health care at local, institutional, state,
and national levels. Assuring that patients are receiving appropriate care at appropriate
intervals is one way to help patients become aware of their current glycemic control and
provide an opportunity for interventions at earlier points in the disease process. Utilizing
a common EHR through all Banner sites, collecting consistent information, and
evaluating common strengths and weakness help identify system issues and trends.
CHAPTER III

EVALUATION PLAN

Evaluation of the CRCCD is an ongoing process. While there are many variables to the success of any plan, the key variables affecting the CRCCD are the consistency of documentation and consistent staff ownership of responsibilities so there is consistency among providers when staff members are floated through the clinics. With the support of Banner and the clinical informatics team, there was a consistent measure of success as results were gathered, evaluated, and reviewed. While diabetes guidelines have been consistent for the past few years, expectations of documentation of meeting these guidelines and reporting requirements are changing for Banner clinics. Working in conjunction with the clinical informatics team was one technique to maintain adherence to advancing expectations. This project was implemented at the Rural Health Clinic in Brush, Colorado. The plan, do, study, act (PDSA) framework for process improvement was utilized to guide interventions as they evaluated effectiveness (Institute for Healthcare Improvement, 2016).

Plan

Baseline data were reviewed and a starting point was established. Baseline data were obtained from NextGen, the previously used EHR, which displayed the provider’s current use of the system and reporting tools. Assessment of the situation demonstrated a misunderstanding of what the documentation expectations were and what contributed
toward those standards. One identified cause for this misunderstanding was that in the EHR’s attempt to allow providers personal preferences in the documentation, there were many different ways to input the information and an inconsistency of where each provider documented.

**Do**

Based on the evaluation from the RE-AIM and applying the theoretical framework from experiencing transitions and the awareness to adherence models, finding a consistent way to enter the data would be the most efficient way to help all providers in the clinic adhere to documentation expectations. A diabetes-specific presentation on health maintenance goals was presented to providers and nursing/MA staff. A workflow process was implemented for nurses and MAs to collect current data on existing diabetic patients. It was expected the presentation of diabetes-specific health maintenance goals and the workflow process could be done over a period of two weeks.

**Study**

Delphi rounds one and two were used to guide specific intervention needs. The effectiveness of implementing a consistent documentation plan was evaluated by reporting the total number of diabetic patients within the clinic who had current documentation of an A1C and evaluation for A1C’s >9%. As there was more success in the number of diabetic patients who had appropriate documentation, the strategies used to reach success would be shared with the Banner system team so other clinics could benefit from the process. The study period spanned six to eight weeks.
**Act**

With the rapid evaluation of the PDSA cycle, if an intervention was not working, adjustments could be made to better meet the metrics. If any areas were identified as not conducive to an ongoing process, they were addressed and revised.

The benefits of implementing a standardized documentation process were there would be a consistent process for meeting the strategic initiative metrics. Using a standard workflow decreased variability between providers, especially when nurses and MAs needed to work with different providers. The most important benefit was fewer patients would be lost in transition if they saw a different provider during their care at the clinic.
CHAPTER IV

RESULTS

For the purpose of this capstone project, a Delphi method was used because of its ability to make effective use of informed intuitive judgement to develop a convergence of opinions (Helmer, 2016). The Delphi method was used to assess and evaluate the use of the ACO tool in managing diabetes in the rural health setting for both phase one and phase two of this project; data gathered from these surveys guided recommendations for phase three. This Delphi study used an expert panel of providers currently working with Cerner in the rural health setting and one member from the utilization group.

The first project objective was to understand what parts of the EHR contributed to the collection of data and reduced duplicate documentation. This objective was met by working with the Cerner documentation team and a clinical performance, assessment, and improvement (CPAI) specialist. A thorough review of the literature was conducted to determine whether the ACO tool was congruent with current evidence-based practice and there was documented benefit for rural practices. Direct observation of current practice in the family medicine clinic and EHR training were also completed. Upon evaluation, it was found one of the most important contributors to satisfying a majority of the metrics was having the labs done at an auto reporting lab. If a metric was identified as due or overdue and once labs results were done, those results automatically satisfied the metric and reset when they were again due. If patients had labs done at an outside lab provider,
they were manually transcribed and then they satisfied the metric. The task of transcribing labs fell primarily to the MA. Unfortunately, any documentation in the narrative note did not satisfy the metric as done.

The second objective focused on identifying the best resource to consistently document the ACO objectives and help all parties involved understand the rationale behind the objectives. Literature review provided validation of diabetes ACO measures. The Delphi study questions helped address the basis of objective points regarding utilization of resources. The goal was to identify knowledge deficit areas, barriers, and get investment from clinical personnel so the change would be coming from the clinical line approach and not from a top-down approach.

Providers working with diabetic patients in the rural health setting were selected to participate on the expert panel to provide a setting-specific view of current care practices. A no signature consent with each questionnaire was sent to individual providers. Responses were collected and data were analyzed to determine the current engagement and discrepancies of the usage, process, barriers, training, and resources with the diabetes ACO tool. The facilitator gathered the responses, summarized the findings, and provided feedback to the providers participating in the study. The Delphi panel members were not aware of the other providers who comprised the expert panel at the time of the survey. The process of enquiring of the panel experts, analyzing the responses, summarizing the information, and providing feedback was repeated until consensus was reached.
Delphi Study Round One

The first phase of this project was focused on assessing the current environment of using the diabetes ACO tool in the rural health setting. The first Delphi survey used a no-signature consent for participation with return of the survey (see Appendix B). The survey consisted of five open-ended questions addressing the five key areas of: usage, process, barriers, training, and resources identified from the RE-AIM evaluation. Surveys were sent to a panel of six experts in the rural health setting--three physicians, two nurse practitioners, and one educator. There was 100% return on surveys for the first round.

The first question asked panelists if they were currently using the ACO measures tool for diabetes found under healthcare maintenance or reminders (see Table 1 for their responses). Based on their responses, question one of Delphi study round two was formulated to draw consensus that the diabetes ACO tool was not being used to its full potential.

Question two sought to identify if there was a current process for addressing diabetes ACO measures (see Table 2 for their panelist responses). Based on their responses, two questions for consensus were formulated to confirm there was a need for a clinic-specific process and that moving the location of the health maintenance tab in the workflow would improve its visibility, thus increasing the odds that it might be addressed. These questions became questions three and four in Delphi round two.
Table 1

*Current Use of Accountable Care Organization Tool*

<table>
<thead>
<tr>
<th>Panelist</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I am not really using them at all except when I do wellness visits.</td>
</tr>
<tr>
<td>2</td>
<td>As the ACO measure indicates it is due for assessment I complete the measure</td>
</tr>
<tr>
<td>3</td>
<td>I am not using the ACO measures tool</td>
</tr>
<tr>
<td>4</td>
<td>I feel the health maintenance tab is cumbersome. There are always so many items that need to be completed. I do not use this location to see if DM screening has been completed.</td>
</tr>
<tr>
<td>5</td>
<td>Not using.</td>
</tr>
<tr>
<td>6</td>
<td>NA</td>
</tr>
</tbody>
</table>

Table 2

*Specific Process to Address Diabetes Accountable Care Organization Measures*

<table>
<thead>
<tr>
<th>Panelist</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>I do not know what the diabetes ACO measures are. I put when A1Cs, foot exams, etc. were done in my notes.</td>
</tr>
<tr>
<td>4</td>
<td>I check A1C based on how well controlled DM is, current medication regimen, etc.</td>
</tr>
<tr>
<td>5</td>
<td>No</td>
</tr>
<tr>
<td>6</td>
<td>The process is outlined in the ACO documentation workflows in Cerner.</td>
</tr>
</tbody>
</table>
Question three sought to identify barriers to using the diabetes ACO tool successfully (see Table 3 for their responses).

Table 3

**Barriers to Using Diabetes Accountable Care Organization Tool Successfully**

<table>
<thead>
<tr>
<th>Panelist</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not being familiar with the tools available in Cerner, where they are, &amp; how they are to be used.</td>
</tr>
<tr>
<td>2</td>
<td>Due ACO need to be more in your face, so you don’t miss something. I do not like that the ACO measure ask for BS eval on 20 year old. (what standard/guideline requires this). A1C of 9 as meeting goal is not appropriate.</td>
</tr>
<tr>
<td>3</td>
<td>I need to be aware of the tool and informed how to use it in order to use it.</td>
</tr>
<tr>
<td>4</td>
<td>A1C is often checked at outside facilities and the tool is rarely updated in that circumstance.</td>
</tr>
<tr>
<td>5</td>
<td>Time constraints, lack of support staff to help accomplish this task.</td>
</tr>
<tr>
<td>6</td>
<td>NA</td>
</tr>
</tbody>
</table>

Question four asked about the training they had received; while the Cerner representative thought there had been “high level” training, only one of the providers recalled any training (see Table 4 for all panelist responses).
Table 4

*Training to Address How to Use Diabetes Accountable Care Organization Measures*

<table>
<thead>
<tr>
<th>Panelist</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>I do not recall any training.</td>
</tr>
<tr>
<td>4</td>
<td>Very little, if any.</td>
</tr>
<tr>
<td>5</td>
<td>Minimal training--introduced briefly in Cerner training and addressed briefly in a staff meeting.</td>
</tr>
<tr>
<td>6</td>
<td>ACO metrics have been taught in the BMG clinic setting for the last 4 years. When we moved to Cerner Ambulatory, providers and staff got very high level introduction to Health Maintenance in the Cerner Ambulatory training. CPAI then also did adjunct training at the clinic level with providers and staff to review in more detail how to document for the quality measures.</td>
</tr>
</tbody>
</table>

Question five inquired about what resources the providers perceived as being more helpful (see Table 5 for their responses). Responses once again covered the need for more education, increased visibility, and more nursing/MA support.

Based on the responses to perceived barriers, training, and resources, the following questions were developed for Delphi round two. Question five asked if there was adequate time in a standard visit to adequately address the diabetes measures. Question six addressed insufficient staff. Question seven sought to find consensus that a three- to five-minute presentation/video would be the best way to demonstrate usage of the diabetes ACO tool.
Table 5

Resources Helpful in Using Accountable Care Organization Tools

<table>
<thead>
<tr>
<th>Panelist</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Education and practice. Education by someone who knows how to use the tool, not a computer person and practice using it. Also, some type of prompt within the system to serve as a reminder when things are to be done.</td>
</tr>
<tr>
<td>2</td>
<td>Pop up when you open the chart so you don’t forget.</td>
</tr>
<tr>
<td>3</td>
<td>I need to know what the tool is to use it successfully.</td>
</tr>
<tr>
<td>4</td>
<td>Better training on when and how to use it efficiently. Making it more user friendly.</td>
</tr>
<tr>
<td>5</td>
<td>Nursing/MA support staff to accomplish this task.</td>
</tr>
<tr>
<td>6</td>
<td>NA</td>
</tr>
</tbody>
</table>

Delphi Study Round Two

Upon review of the data garnered from the round one of the Delphi study, seven “yes” or “no” questions were developed to provide consensus on the identified themes to create the second Delphi survey (see Appendix C). The second Delphi survey questions were sent out to the panelists with their comments for review. The second round of survey questions was also accompanied with a no-signature consent--return of the survey was considered consent. A comment section was also provided for further feedback. For round two, surveys were sent out to the original expert panel, two additional physicians assistants, and their corresponding medical assistants for a total of 14 surveys. Ten surveys were returned.
There was unanimous consensus regarding the following:

- The diabetes ACO tool was not being used to its full potential.
- There was insufficient formal education regarding the diabetes ACO tool.
- There was not adequate time to address the diabetes ACO tool in a standard visit.
- There was inadequate support staff available to reliably address these measures at most visits.
- A three- to five-minute video demonstrating the most efficient way to address the diabetes ACO measures would be useful.

Although there was concern amongst panelists as to how moving the ACO tool up in view would work, all respondents agreed moving it would improve visibility. However, some felt that no matter where it was moved, there was insufficient time to address the ACO measures well in an average visit. Similarly, one provider did not think adding a workflow process would improve diabetes ACO usage as there is not enough time in the visit. Comments on workflow included the following: “My concern is that there are already so many steps in documenting. Perhaps a check in nurse or check out nurse could do this? That would be ideal!”

Additional comments provided on surveys included the following:

- I do not even know what the ACO tool is so training has been lacking. As providers we have to have help from support staff when doing this stuff, we simply do not have time enough to do it; one MA is not enough, we need at least one extra MA per station.
• I would suggest to find a way that actions and effort do not need to be duplicated. Documenting the same thing in multiple locations is a waste of time.

• Explanation of quality measures would be helpful. Explanation of Cerner workflow would be good. A flowsheet for diabetes would be very helpful. A point of care A1C might help.

• A CLIA [clinical laboratory improvement amendment] waved A1C meter would be helpful.

• Get an A1C machine that would be readily available at appointments. I guide treatment primarily off A1C and getting the result of that test five days later than trying to address the results over the phone and make medication changes over the phone is poor care at best.

• (In regards to moving the ACO tool up in the provider view) I recently moved it near the top and have used it much more than prior. Yes and No, moving it would make it more visible, but it will not change the fact that I do not have time to deal with it unless it is a wellness visit, it is just too cumbersome.

Diabetes Accountable Care Organization Education

This capstone project strove to identify educational needs that would improve the use of the diabetes ACO tool. Information gathered from the literature and the Delphi studies helped guide the steps for the education and workflow process when addressing the diabetes ACO in the rural health setting.
Facilitators and Barriers

Key facilitators of this project revolved around time, technology, the expert panel, facility support, and the Cerner CPAI. The panelists took time to think about their responses and provided detailed feedback on the survey questions. Implementation of the new EHR system also facilitated this project as a majority of the providers, MAs, and nursing staff received the same training on the same timeline. Providers who participated on the expert panel facilitated the project and furthered the knowledge of the DNP student. Open communication between the providers and MA/nursing staff facilitated further knowledge sharing. There was facility support from the clinic manager who also participated as a community resource, which promoted involvement. Support from the Banner Cerner team was also instrumental in impacting the outcome of this project as they provided the original educational materials, approved revisions, and accepted feedback from the project.

Key barriers impacting this project were time and technology. The turnaround time on surveys limited the amount of time the outcomes could be monitored. There is need for further evaluation to evaluate progress toward the goals. Technology was also a large barrier as the transition to the new EHR provided a steep learning curve for the clinical staff. The amount of information provided with the initial training was overwhelming to most staff and there was not a lot of focus on the diabetes ACO measures at the time of the go-live.

Recommendations Related to Facilitators and Barriers

Further evaluation of the usage of the diabetes ACO tool and other ACO measures would need to be done to provide sustainable quality process improvement.
Recommendations to the Cerner educational team were to break each ACO measure out individually and provide a short, less than five-minute educational piece about it. The educational piece should explain how to best address the measure and key points to meeting meaningful use. Continued training would be needed to facilitate improved usage of the EHR. To support the educational piece, a recorded presentation specific to the diabetes ACO would be presented to select providers and the Cerner CPAI for consideration. Further evaluation of strategies would be needed to address the time constraints in a standard clinic visit. One recommendation was a revised workflow that would bring the health maintenance tab into the view to look for overdue items and make it part of the standard visit. The need for staffing changes and additional equipment was presented to the clinic leadership.

As a graduate student in a Doctor of Nursing Practice program, this project enhanced the need for following guidelines and the importance of documentation to support care. This project also supported the importance of remaining involved in practice guideline groups as this keeps the provider aware of changes and provides an avenue for feedback. This project also facilitated networking that will provide practice resources for the future.

**Unintended Consequences**

Identifying the educational needs to better utilize the data gathered from the Delphi study provided insight to a problem that was deeper than just an educational barrier. Key barriers that could not be addressed by this capstone project revolved around the need for more staff, more time to address diabetes ACO measures, equipment not available in the clinic, and duplication of work in the EHR. The primary negative
consequence was identifying the knowledge gap between what was actually being done in the clinical setting versus what the Cerner education team thought was the standard approach in the clinical setting.

Another negative consequence was working with the delay in laboratory data with regard to the clinic visit. If laboratory testing was not done at least five days prior to the appointment, the data were not available to the provider to make recommendations while the patient was present. The delay in data was a barrier to quality care as there was a missed opportunity for the provider to review the information with the patient in person; the process for follow-up required phone calls, letters, and making the patient come in for another appointment—all which provided more opportunity for loss of quality care. A CLIA waved A1C meter could be purchased for the respective clinics but additional cost, training, and monitoring would be required.

There were also positive consequences of this quality improvement project. One positive consequence brought attention to the diabetes ACO health maintenance tool and how it helped identify patients not current with care. Another positive consequence was it facilitated discussions among providers and their MAs about how to address the diabetes ACO measures. One of the most influential positive consequences was feedback from the Banner Cerner education team about the need for more specific education in smaller amounts.
CHAPTER V

CONCLUSIONS AND FUTURE PLANNING

This evidence-based scholarly project sought to address the complex process of chronic care of diabetic patients in the rural health setting. This quality improvement project delved into the need for specific education on how to address the diabetes ACO tool identified by a RE-AIM process and confirmed by a Delphi study. The rural health setting is tasked with managing a complicated patient population in the setting of limited specialist availability and high provider turnover. The ACO measures currently being evaluated supported evidence-based literature and current guidelines. One conclusion from this project was there was a system issue of consistent results as no standard process addressed the diabetes ACO measures amongst the clinics.

While this project focused on the diabetes aspect of the ACO measures, other ACO measures must be met in a similar fashion. Information gathered in this project could be used to provide better training and resources for addressing the other measures and ensuring a standardized approach to meeting them. Useful pieces of information from this project that would affect the other measures were the initial training was not sufficient and the supplementary class was too large and overwhelming. Thus, addressing each ACO measure in a smaller, vignette setting would provide better retention in practice.
Moving forward in practice, the Delphi portion of this project identified four major areas for improvement: staffing, equipment, process flow, and training. The need for more MA/nursing staff or changes to how current staff members were utilized was brought before clinic leadership. Similarly, the potential need for a CLIA waved A1C meter in the clinics was also presented to clinic leadership. The remainder of the project focused on improvement variables that could be impacted by this DNP student--process flow and training.

**Doctor of Nursing Practice Evaluative Criteria**

The capstone project fulfilled the goal of producing “nurses that are uniquely prepared to bridge the gap between discovery of new knowledge and the scholarship of translation, application, and integration of this new knowledge into practice” (Waldrop, Caruso, Fuchs, & Hypes, 2014, p. 300). Waldrop et al. (2014) set forth the EC as PIE criteria for a successful DNP project; the EC as PIE acronym reflects the ability of a doctoral-prepared nurse practitioner to translate information from literature and research into useful practice: E= Enhancing health outcomes, C= Culmination of practice inquiry, P= Partnerships with interdisciplinary teams, I= Implementing/apply/translation of evidence into practice, E= Evaluation of practice outcomes.

**Enhances Health Outcomes**

Chronic care of diabetes in the rural health setting enhances health outcomes by identifying patients at risk for poor outcomes due to infrequent care or current poor control. By monitoring the diabetes ACO tool, there is a reminder of when labs are due and if the last A1C was out of range. While stricter targets could be achieved, the ACO tool identifies and reports minimum standard of care data, which allow some room for
those individuals with complex circumstances to work on their health without penalizing
the individual provider. Capturing this at-risk population in a timely fashion has the
potential to improve health outcomes in the rural health setting. This project also helped
providers and MA staff to see the importance of the ACO tool in practice of managing
the diabetic patient.

**Culmination of Practice Inquiry**

One aim of this project was to review the literature to ensure the data expectations
were in line with current evidence-based practice and would reflect improved care. The
review of literature confirmed the ACO reporting tool did reflect current standard of care
and current guidelines for frequency of care. The Delphi study reflected current usage,
barriers, and needs of the rural health setting for diabetes ACO measures.

**Partnerships**

The success of the project involved partnership of interdisciplinary teams. This
project facilitated partnerships between the MA/nursing staff and the providers as they
worked with the DNP student to identify usage, barriers, and solutions to addressing
diabetes in the rural setting. There was an enhanced partnership between the DNP
student and the Cerner education team as the education process was reviewed and
feedback on knowledge gaps was provided. There was also a partnership from the
leadership perspective as they also benefited from recognizing the usage, barriers, and
knowledge gaps.

**Implementing Evidence into Practice**

As a result of the this project, two specific interventions were implemented. The
first intervention was developing a diabetes-specific ACO presentation that was less than
five minutes in length to familiarize providers and MAs with the diabetes-specific ACO measure, where to document the measure, and the expectations. The second intervention was to have the MAs include health maintenance assessment in their workflow so they could anticipate what needed to be addressed at each visit. Similarly, the providers were asked to move health maintenance up under chief complaint so they could see when the task was due. Based on the Delphi study feedback, a request was made to the Cerner design team to add orders to this section so the measure could be addressed from one screen.

**Evaluation of Practice Outcomes**

While the initial information from this project was promising, further evaluation is needed to evaluate the success of the educational information. Further evaluation is also needed for other ACO health measures that could to be addressed in a similar fashion. As improvements are made, there is a need for dissemination of knowledge to other rural clinics on strategies to overcome struggles specific to the rural setting. This project is sustainable and essential as the diabetes measures are reported to the ACO and the outcomes affect reimbursement. Similarly, this project would benefit other ACO measures as there is consistency in evaluating the ACO measures and in how to correctly address them.

**Summary**

This project successfully implemented changes to the education/training on how to use the diabetes ACO tool and incorporate the ACO measures into the process flow. As a result of the Delphi study, feedback was provided to the Cerner education team so they could adapt their training to better meet the needs of those working in the rural
health setting and potentially throughout the system. The Delphi study also provided information for the leadership team in identifying the need for changes in staffing by dedicating a nurse/MA to work with the ACO measures. The need for an A1C meter was also identified; having the availability to capture an A1C at the current visit might improve outcomes and patient/provider communication. Continued work toward a standardized process would help decrease variability between clinics and providers. Recommendations would be to continue to provide education for each individual ACO measure, continue to define the workflow that supports the most consistent reporting of these measures, and continue to find solutions to improve the care process. Throughout this project, the DNP student was able to utilize clinical and didactic experiences to integrate the evaluation of healthcare systems, nursing theory, population health management, and collaboration with leadership and the healthcare team.
REFERENCES


APPENDIX A

DIABETES PREVALENCE BY REGION
IN COLORADO
Diabetes prevalence by geographic region, Colorado, 2010-2011.

Southeastern Colorado bears the largest burden of diabetes, with prevalence as high as 13%, almost twice the state average and similar to the highest nationally ranked state.

Source: Colorado Department of Public Health & Environment, 2013.
APPENDIX B

DELPHI ROUND ONE
Round One of Delphi Study

1. How are you currently using the ACO measures tool, for diabetes, found under health care maintenance or reminders?

2. Is there a specific process that is being used to address the diabetes ACO measures?

3. What do you perceive to be barriers to using this tool successfully?

4. What training have you had to address how to use the diabetes ACO measures?

5. What resources do you think would be more helpful in using the ACO tools more successfully?
CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH
UNIVERSITY OF NORTHERN COLORADO

Project Title: Chronic Care of Diabetes in the Rural Health Setting

Researchers: Sandra Jane Boone (BSN-DNP student)
Kathleen N. Dunemn, PhD, APRN, CNM, School of Nursing

Phone Number: (970) 351-3081 e-mail: Kathleen.Dunemn@unco.edu

The purpose of this capstone project is to use a Delphi Technique to help identify current practice and barriers to using the Accountable Care Organization (ACO) tool in the electronic health record, and identify processes to improve documentation. This project is centered around a non-experimental study approach. Use of the Delphi survey data will be used to query a panel of the local experts currently using the ACO tool. The Delphi technique is a consensus technique that will include two rounds of evaluation to a group of panelists. The panelists are selected based on providers currently eligible to be included in the clinic data reporting. The goal of the Delphi study is to identify needs and develop a consensus for the rural health clinic. This capstone project will consist of three to four phases. The first phase will consist of evaluation of the evidence to include both empirical and expert consensus, and assessment of the current use of the ACO tool to provide consistent care. This first phase of the Delphi study will collect expert consensus. The second phase of the Delphi study will use the data collected from the expert consensus and survey the larger group of clinic personnel. The third phase will use the collected data to develop practice guidelines for more consistent use of the ACO tool in the electronic health record. This third phase/pilot study is not part of this DNP project; it is for future planning purposes only. The planning of the pilot study will be part of this DNP capstone improvement project, as the execution of the pilot study is not part of the project.

Delphi studies allow a process to use a multidisciplinary consensus to establish solutions specific to the environment that they are being used in. It is anticipated that 2 or 3 rounds may be necessary, but no more than 4 rounds. All Delphi surveys will be
sent and returned electronically. It is anticipated that it will take each panelist approximately 20 minutes to complete each round of this Delphi Study.

Participation is voluntary. If you begin to participate, you may decide to stop or withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. If you have any questions, please contact one of the undersigned.

Having read the above and having had an opportunity to ask any questions, please access and complete the attached document “Phase One: Delphi Study Round One Questions.” Please return the completed survey to: mill7970@bears.unco.edu

By completing and returning the questionnaire, you will give us permission for your participation. You may keep this form for future reference. If you have any concerns about your selection or treatment as a research participant, please contact Sherry May, IRB Administrator, Office of Sponsored Programs, Kepner Hall, University of Northern Colorado Greeley, CO, 80639. Telephone: 970-351-1910.

Kathleen N Dunemn, PhD, APRN, CNM
Kathleen.Dunemn@unco.edu
970-351-3081
Sandra Boone BSN-DNP student
mill7970@bears.unco.edu
970-380-7022

This informed consent information will be emailed and accompany each round of the Delphi study

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APPENDIX C

DELPHI ROUND TWO
Project Title: Chronic Care of Diabetes in the Rural Health Setting

Researchers: Sandra Jane Boone (BSN-DNP student)

Kathleen N. Dunemn, PhD, APRN, CNM, School of Nursing

Phone Number: (970) 351-3081 e-mail: Kathleen.Dunemn@unco.edu

The purpose of this capstone project is to use a Delphi Technique to help identify current practice and barriers to using the Accountable Care Organization (ACO) tool in the electronic health record, and identify processes to improve documentation. This project is centered around a non-experimental study approach. Use of the Delphi survey data will be used to query a panel of the local experts currently using the ACO tool. The Delphi technique is a consensus technique that will include two rounds of evaluation to a group of panelists. The panelists are selected based on providers currently eligible to be included in the clinic data reporting. The goal of the Delphi study is to identify needs and develop a consensus for the rural health clinic. This capstone project will consist of three to four phases. The first phase will consist of evaluation of the evidence to include both empirical and expert consensus, and assessment of the current use of the ACO tool to provide consistent care. This first phase of the Delphi study will collect expert consensus. The second phase of the Delphi study will use the data collected from the expert consensus and survey the larger group of clinic personnel. The third phase will use the collected data to develop practice guidelines for more consistent use of the ACO tool in the electronic health record. This third phase/pilot study is not part of this DNP project; it is for future planning purposes only. The planning of the pilot study will be part of this DNP capstone improvement project, as the execution of the pilot study is not part of the project.

Delphi studies allow a process to use a multidisciplinary consensus to establish solutions specific to the environment that they are being used in. It is anticipated that 2 or 3 rounds may be necessary, but no more than 4 rounds. All Delphi surveys will be sent and returned electronically. It is anticipated that it will take each panelist less than 10 minutes to complete each round of this Delphi Study.
Participation is voluntary. If you begin to participate, you may decide to stop or withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. If you have any questions, please contact one of the undersigned.

Having read the above and having had an opportunity to ask any questions, please access and complete the attached document “Delphi Study Round Two Questions.” Please return the completed survey to: mill7970@bears.unco.edu

By completing and returning the questionnaire, you will give us permission for your participation. You may keep this form for future reference. If you have any concerns about your selection or treatment as a research participant, please contact Sherry May, IRB Administrator, Office of Sponsored Programs, Kepner Hall, University of Northern Colorado Greeley, CO, 80639. Telephone: 970-351-1910.

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This informed consent information will be emailed and accompany each round of the Delphi study

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Delphi Study Round Two Questions

1. Do you agree, that the diabetes ACO tool is not being used to its full potential?  
   | YES | NO |

2. Do you agree, that there has not been sufficient formal education specific to the diabetes ACO tool?  
   | YES | NO |

3. For providers, would moving the health maintenance section to the top of your workflow, just below chief complaint, improve health maintenance recommendation visibility? 
   For MA’s, would including Health Maintenance in the intake form/page improve visibility?  
   | YES | NO |

4. Would a clinic specific workflow process involving both MA’s and Providers improve the diabetes ACO usage?  
   | YES | NO |

5. In a standard visit, there is not adequate time to address the diabetes ACO tool?  
   | YES | NO |

6. Do you agree that there is not adequate support staff available to reliably address these measures at most visits?  
   | YES | NO |

7. Would a 3-5 minute presentation/video demonstrating the most efficient way to address the diabetes ACO measures tool be useful?  
   | YES | NO |

Do you have any other suggestions or comments regarding how to improve the chronic care of diabetes in our clinical setting and document using the ACO tool for diabetes?
APPENDIX D

STATEMENT OF MUTUAL AGREEMENT
Statement of Mutual Agreement

University of Northern Colorado

Doctorate of Nursing Practice Capstone Project

Sandra Boone

4/19/16

The purpose of the “Statement of Mutual Agreement” is to describe the shared view between Brush Family Medicine and Sandra Boone, DNP Candidate from the University of Northern Colorado, concerning her proposed capstone project.

Proposed Project Title: Chronic Care of Diabetes in the Rural Health Setting

Brief Description of Proposed Project: Work in conjunction with the clinic to help better utilize the electronic health record to manage the chronic care of diabetes.

Goal of Capstone Project: Primarily, to work with providers in their use of the electronic health record, to help facilitate the established standard of care.

Proposed On-site Activities: clarifying the process to chart data in to appropriate collection points within the electronic health record. Assisting in the referral process for diabetes self-management education. Phone and/or in-person discussions with patients about routine diabetes management testing, medications, and follow-up.

Confidentiality of Patient Records: No individualized data from patient records will be used in this project. Only aggregate data from system reporting will be used.

The designated Capstone Community/Agency member will agree to participate in the review and approval of the proposal and presentation of the final version of the project. He/she will attend (on campus or remotely) the meetings for both.

The DNP Capstone project will include a final report, an abstract, potential publication or oral presentation of the report. No personal identifiers will be included and all data will be reported in aggregate form. The author welcomes any comments or suggestions from the Agency, but reserves the right to publish findings and analysis according to professional standards and principles of academic freedom. For any work of a scholarly nature, the Author agrees to follow the Agency preferences in how it is to be named (or not) in the work.

Signature of DNP Student Date

Sandra Boone 4/19/16

Signature of Agency Member Date

4/19/16

Signature of DNP Capstone Chair Date

6/10/2016
APPENDIX E

INSTITUTIONAL REVIEW BOARD APPROVAL
DATE: November 30, 2016

TO: Sandra Boone, DNP

FROM: University of Northern Colorado (UNCO) IRB

PROJECT TITLE: [987169-1] Chronic Care of Diabetes in the Rural Health Setting: A Quality Improvement Project

SUBMISSION TYPE: New Project

ACTION: APPROVAL/VERIFICATION OF EXEMPT STATUS

DECISION DATE: November 30, 2016

EXPIRATION DATE: November 30, 2020

Thank you for your submission of New Project materials for this project. The University of Northern Colorado (UNCO) IRB approves this project and verifies its status as EXEMPT according to federal IRB regulations.

Thank you for your patience with the UNC IRB process. Your application is verified/approved 'exempt' and you may proceed with this research project according to the submitted protocols.

Sincerely,

Dr. Megan Stellino, UNC IRB Co-Chair

We will retain a copy of this correspondence within our records for a duration of 4 years.

If you have any questions, please contact Sherry May at 970-351-1910 or Sherry.May@unco.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records.