Diabetes Self-Management Education Provision by an Interprofessional Collaborative Practice Team: A Quality Improvement Project

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Abstract

Diabetes is a disease that requires people to gain skills and knowledge necessary to manage their condition successfully. Diabetes is a significant health problem and an increasingly prevalent disease in the United States (US), affecting 9.3% of the adult population (Centers for Disease and Prevention [CDC], 2014). Patients with type 2 diabetes are the focus of this project. Type 2 diabetes, accounts for 90% to 95% of patients with diabetes (CDC, 2014). The shift in diabetes care is to focus teaching on problem-solving (self-management) to engage and empower patients with diabetes to live the best quality of life. Healthcare providers may not always be aware of diabetes self-management education available to patients. Therefore, the American Association of Diabetes Educators has identified seven essential self-care behaviors known as the American Association of Diabetes Educators [AADE] 7, 2010). The AADE7 is a tool to assist healthcare providers in providing key topics related to diabetes. The objective of this project was to educate healthcare providers on Diabetes Self-Management Education (DSME). The desired outcome was the care providers’ application of new DSME knowledge and measured by an increased in the rate of DSME documentation on the diabetes flow sheet. Results from this project revealed the rate of 100% documentation of patient DSME on the flow sheet from no documentation before the project. The use of the AADE7 tool and documentation promote preventive practice care and encourage self-care management among patients with diabetes to avert any long-term complications.

Keywords: diabetes, diabetes self-management care education, self-care behaviors
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Diabetes is a major health problem and an increasingly prevalent disease in the United States (US), affecting 9.3% of the adult population (Centers for Disease and Prevention [CDC], 2014). People with diabetes either do not make enough insulin (Type 1 diabetes) or cannot use insulin properly (Type 2 diabetes) (CDC, 2014). Type 2 diabetes accounts for 90% to 95% of all diagnoses of diabetes (CDC, 2014). The risk of developing diabetes is increased among Hispanics and Blacks groups (CDC, 2014).

It is important that patients with diabetes understand how to manage their care effectively. Knowledge of diabetes self-management is not only needed for providers and payers but most importantly, for the patients who have an essential role in managing their disease. Because nearly all of the care that is related to managing diabetes is performed by patients with diabetes and their families, and not health care professional, it is imperative for these individuals to have a deep understanding of this disease. There is strong evidence that Diabetes Self-Management (DSME) programs have beneficial effects on physical and emotional outcomes, along with improved health-related quality of life (Powers et al., 2015). The increase in the individual and public health burden of diabetes makes it important to assess, prevent and treat complications that may occur in the future. The role of nurses in health promotion is essential in educating and engaging the patient in self-care (Kulbok, Thatcher & Meszaros, 2012). The focus of this project is the reinforcement of the importance of delivering diabetes self-management education to ensure consistent DSME is delivered by the care providers to the targeted population of patients with diabetes hemoglobin A1C (A1C) greater than 8 (poorly control) receiving care at a Cincinnati Health Department Millvale neighborhood health center. The
The clinical question for this project is presented in the Patients, Intervention, Comparison, and Outcome (PICO) format. The formulation of a PICO question was the first step in this evidence-based practice project (Melynk & Fineout-Overholt, 2010). The PICO question for this evidence based practice project was the following:

“Among the interprofessional collaborative practice team caring for patients with type 2 diabetes, will Diabetes Self-Management Education (DSME), based on the American Association of Diabetes Educators (AADE) seven essential self-care behaviors known as the (AADE7) promote the implementation of a Type 2 diabetes complications prevention and documentation in the clinical setting?”

**Interprofessional Collaborative Practice**

In today’s complex health environment, interprofessional collaboration is one of the hallmarks of successful healthcare innovations (Chism, 2013; Institute of Medicine [IOM], 2010). The Institute of Medicine (IOM) report, *The Future of Nursing*, calls for nurses to take a leadership role in the changing healthcare system (Chism, 2013; IOM, 2010). Interprofessional collaboration refers to the interactions between individuals who bring their expertise from various educational backgrounds, experience, and values to the processes of delivering care (Zaccagnini & White, 2014). It is important for future Doctors of Nursing Practice (DNP) and other health professionals to engage in the collaborative interprofessional practice to achieve optimal health outcomes. The interprofessional collaborative practice (IPCP) team identified for this project consists of a family nurse practitioner, a registered nurse, a pharmacist and a social worker. The IPCP team members is referred to as the IPCP team in this paper.
Congruence of the Population Health Focus and Organization’s Goals

The mission of Cincinnati Health Department (CHD) is to promote a culture of health and to empower its residents in making health decisions (City of Cincinnati Health Department, 2016a). The CHD operates health centers and school-based health centers serving Cincinnati’s most underserved, low-income, and vulnerable population (City of Cincinnati Health Department, 2016a). In addressing health disparities, CHD and the Creating Healthy Community Program have identified five neighborhoods for focused interventions in the community. These neighborhoods are Bond Hill, Madisonville, Spring Grove, Winton Hills, and Millvale. The CHD Millvale health center was the location for this DNP project where patients with type 2 diabetes (T2D), A1C 8% and higher were identified.

Diabetes prevalence has grown in the population in the city of Cincinnati, Ohio (CDC, 2010).

Purpose of Project

The purpose of this DNP education project was to increase the provision and documentation of diabetes self-management education at the Millvale Health Center. This outcome was achieved by educating the IPCP team about DSME patient education and documentation. Diabetes self-management education aligns with the CHD’s mission statement to empower patients with diabetes about self-management and making health decisions. Forty-four rate of the residents of the city are African Americans, and 30.9% live below the Federal poverty line (City of Cincinnati Health Department, 2016b; United States Census, 2010). Many residents of the Millvale area in the city of Cincinnati, served by the clinic selected as the site for this DNP project are African Americans families living below the poverty level (Maloney & Auffrey, 2000; United States Census, 2010).
Specific Aim

The specific aim of the study was to increase the rate of type 2 diabetes patients at the Millvale Health Center receiving DSME. This outcome was evidenced by increased documentation of DSME in the electronic health record (EHR). The provision of DSME was accomplished through the collaboration with patients and the IPCP team members. The objective of this quality improvement project was to educate IPCP team members on Diabetes Self-Management Education (DSME) and increase the rate of documentation on the current diabetes flow sheet over a 60-day period. To accomplish this specific aim, the following took place:

- Education diabetes intervention of IPCP team members about DSME American Association of Diabetes Educators seven essential self-care behaviors known as the AADE7. The evidenced-based standards for DSME used in this Interprofessional Collaborative Practice (IPCP) education intervention have been established by the American Diabetes Association.

- Re-introduce the diabetes flow sheet. The current diabetes flow sheet had not been used for patient DSME at the Millvale Health Center. The diabetes flow sheet allowed providers document teaching of diabetes-related topics; to quickly review pertinent current information on patients, information from previous visits, assess how carefully to monitor the patient and current and follow-up visits.

- Retrospective chart reviews analysis was conducted to establish baseline and post provision patient-DSME and its documentation by IPCP team members on the flow sheet.
Collection of weekly chart review of the DSME data from flow sheet of patients’ clinic visits the prior week. The use of Plan, Do, Study, Act Cycle formed the basis for understanding changes that resulted in improvement.

**Problem Statement**

Diabetes is the seventh-leading cause of death in the city of Cincinnati (Ohio Department of Health 2008; National Center for Health Statistics, 2012). Diabetes has raised public health concerns. One of Cincinnati Health Department’s clinics, the Millvale Health Center, serves a large population of patients, many of whom are African Americans have a diagnosis of diabetes, including 158 individuals with poorly controlled diabetes. High hemoglobin A1C, 8% and higher in these 158 patients at the Millvale Health Center was a concern to the clinic’s administration. Hemoglobin A1C (A1C) is a blood test indicating person’s blood glucose control over the past three months (National Institute of Diabetes and Digestive and Kidney Disease [NIDDK], 2014). Hemoglobin A1C level below 5.7 rate is considered normal (NIDDK, 2014). Better management of diabetes is crucial to improving patient outcomes and reducing complications.

Factors associated with a poor glycemic control (A1C) in patients with Type 2 diabetes (T2D) may be with patients’ self-management as well as providers’ care (Nam, Janson, Stotts, Chesla, & Kroon 2011). African Americans with diabetes, in particular, have documented poorer glycemic control and are twice as likely to die from diabetes complications compared to their white counterparts (Gaillard & Osei, 2016; Parrinello et al., 2016; U. S. Department of Health and Human Services Offices of Minority Health, 2016). Several factors that may contribute to poor glucose control include cultural background, lifestyle behaviors, diet, smoking, living conditions, transportation, access to health care and health literacy (Burke, Sherr, & Lipman, 2014). Diabetes Self-Management Education is important for this population at risk due to the
above mentioned social determinants to reduce the development of complications of diabetes from poor glycemic control (Burke, Sherr, & Lipman, 2014).

Care provider barriers to effectively engage and deliver diabetes self-management education to patients are a lack of time and deficits in the training or skills (Burke, Sherr, & Lipman, 2014). Although nurses have a basic education in health promotion and prevention, they may lack strategies and needed teaching skills to deliver the content and support mechanisms related to diabetes education to patients (Krall, Donihi, Hatam, Koshinsky, & Siminerio, 2016). Training nurses and other members of the IPCP team in DSME may increase their confidence and ability to effectively teach patients how to manage their illness (Burke, Sherr, & Lipman, 2014). There were gaps identified in diabetes self-management education provision and documentation by the IPCP team at the Millvale Health Center confirmed by the nursing administrator (N. Bertschy, personal communication, August 29, 2016). Patients with AIC 8% and higher were not receiving DSME as evidence by no documentation on current diabetes flowsheet (N. Bertschy, personal communication, August 29, 2016). The IPCP team members were educated in DSME by the DNP student to ensure that an increased number of patients with diabetes are receiving diabetes self-management education at the point of care.

**Significance for Population Health**

Population health is defined as including health determinants and using these measures in health promotion and prevention in the community (Chism, 2013). This DNP project was population-based with a focus on clinical improvement and population health improvement as espoused by the Essential VII of Doctoral Education for Advanced Nursing Practice. The outcome of this project increased the rate of patients receiving patient diabetes self-management to improve self-management of their disease. The prevalence rate of diabetes was 9.3% in 2012.
(American Diabetes Association [ADA], 2012) has increased especially in ethnic/minority populations (CDC, 2012). The major risk factor linked to T2D is obesity (CDC, 2014). Type 2 diabetes can lead to comorbidities and diabetes-related complications such as hypertension, stroke, cardiovascular disease, kidney failure and blindness (Haas et al., 2012).

High-risk patients with T2D were targeted for the improved provision of DSME in the Millvale Health Center. Approximately 158 patients with diabetes have A1C of eight rate and higher in the past year have been identified by the Cincinnati Health Department Millvale health center nurse administrator. The concern was that these patients lack sufficient knowledge of diabetes self-management which may contribute to long-term and diabetes-related complications. The problem addressed in this project was the lack of DSME currently provided by the IPCP team. The IPCP team was educated on DSME and the importance of patients with diabetes receiving diabetes self-management education at the point of care.

**Prevalence and Burden**

**Prevalence**

Diabetes is a devastating chronic disease and impacts people worldwide. The International Diabetes Federation [IDF], 2015) reported that there were more than 387 million people living with diabetes worldwide. The global prevalence of diabetes for adults has risen from 4.7% in 1980 to 8.5% in 2014 (IDF, 2015; World Health Organization [WHO], 2016). In 2014, 29.1 million or 9.3% of the US population were reported to have diabetes (CDC, 2014). Type 2 diabetes accounts for 90% of diabetes cases (CDC, 2014). Diabetes is projected to double in the next ten years, and if this continues to rise, over 100 million persons may be affected by 2050 (Boyle, Gregg, Barker & Williamson, 2010). The prevalence of diabetes differs among
Burden

Diabetes was the 7th leading cause of death in the US in 2013 (CDC, 2014). Diabetes imposes a significant burden on the US economy. The total estimated diabetic cost (direct and indirect) in 2012 was 245 billion dollars, a 41% increase from $174 billion in 2007 (CDC, 2014; ADA, 2012). Direct medical costs included medications, hospitalizations and primary care visits were twice higher in persons with diabetes compared with persons without diabetes (CDC, 2014). Indirect costs were related to loss of wages, disability and premature death (CDC, 2014).

Complications Related to Diabetes

Hypertension is associated with T2D; hypertension is a major risk factor for cardiovascular disease, and its prevalence is increased in persons with diabetes. Therefore, early diagnosis and management of elevated blood pressure (BP) are critical in the care of patients with diabetes (Caspersen et al., 2012). Patients with diabetes should have their blood pressure checked at each office visit for hypertension (American Diabetes Association [ADA], 2015). Current guidelines for management of hypertension in patients with diabetes is to maintain a systolic blood pressure less than 140 mmHg (ADA, 2015; Meschia et al., 2014; Weber & Turner, 2016).

Hypertension: Recommendations

1. **Regular BP screening and appropriate treatment** of patients with hypertension, including lifestyle modification and pharmacological therapy, are recommended (Class I; Level of Evidence A).
2. **Annual screening for high BP and health-promoting lifestyle modification** are recommended for patients with prehypertension (SBP of 120 to 139 mm Hg or DBP of 80 to 89 mm Hg) (Class I; Level of Evidence A).

3. Patients who have hypertension should be treated with antihypertensive drugs to a target BP of <140/90 mm Hg (Class I; Level of Evidence A). **Evidence emerging that may be reduced to 120/80.**

4. Successful reduction of BP is more important in reducing stroke risk than the choice of a specific agent. Treatment should be individualized on the basis of other patient characteristics and medication tolerance (Class I; Level of Evidence A).

5. Self-measured BP monitoring is recommended to improve BP control. (Class I; Level of Evidence A). (Meschia, et al, 2014)

Researchers have found high blood pressure to be a major cause of cardiovascular/ stroke morbidity and mortality among African American women (Flack, Ferdinand, & Nasser, 2003). The co-existence of T2D and high blood pressure is common among African American women and can lead to chronic disabilities such as stroke, and even death (Office of Minority Health [OMH], 2010; Long & Dagogo, 2011). African American women with diabetes have significantly higher rates (59.4%) of high blood pressure and are hospitalized more frequently because of hypertension compared to white women. Primary prevention and early diagnosis of high blood pressure were shown to improve health outcome and prevent high rates of hospitalizations (Will & Yoon, 2013). In addition to high blood pressure, obesity, high cholesterol, and diabetes are risk factors for stroke (Flack, Ferdinand & Nasser, 2003). The early detection of diabetes and hypertension allows healthcare providers to recognize of risk factors...
and manage these diseases. Education about lifestyle behavior modification and the promotion of a healthy diet are critical (Grave et al., 2010).

**Diabetes Self-Management Education**

Evidence shows DSME by healthcare providers improves disease management, and the quality of life, and reduces hospitalizations (Powers et al., 2015). Patients diagnosed with diabetes may lack proper knowledge to manage their disease effectively. Lack of knowledge may also pose a risk for developing the complications of diabetes. Diabetes self-management education is a crucial element of care for patients with diabetes to delay or prevent complications of the disease (Hass et al., 2012).

Diabetes self-management education is a process through which people with diabetes are educated about behavior and lifestyle modification to manage their disease (Burke, Sherr & Lipman, 2014; Funnell et al., 2011). This diabetes self-management education process is supported by evidenced-based standards to assist nurses in teaching patients (Funnell et al., 2011). Self-management support engages patients with chronic disease, such as diabetes, in decision making that improves health-related behaviors and clinical outcomes on an ongoing basis (Hass et al., 2012).

Diabetes self-management education includes topics such as appropriate exercise, appropriate use of medications, nutrition, and communicating effectively with family, friends, and healthcare providers. Patients who took part in self-management education activities demonstrated significant improvement in exercise, and ability to perform social and household activities (CDC, 2016). Additionally, these patients were less anxious and depressed and more confident in managing their condition (CDC, 2016). For example, Tang, Funnell & Oh (2012), reported that 52 African American with T2D, demonstrated lower A1C ($P < .001$) after two
years of self-management education. In addition to lower A1C levels, other outcomes were reductions in blood pressure, cholesterol, and body weight (Tang, Funnell & Oh (2012).

The project was focused on DSME provided to patients with diabetes by their providers. The objective of this study was to educate the IPCP team caring for patients with diabetes at the Cincinnati Health Department (CHD) Millvale Health Center on DSME. The specific aim of the study was to increase the rate of high-risk patients with diabetes receiving DSME. This outcome was evidenced by increased documentation of DSME in the electronic health record (EHR).

**Barriers and Opportunities to Proposed Project**

Barriers to diabetes self-management education (DSME) that have been reported in the literature include IPCP teams’ lack of training about DSME and time constraints. The provider’s style of teaching including lack of cultural sensitivity and lack of educational materials on the site are additional barriers to effective learning (Nam et al., 2011). The CHD nursing administrator reported barriers similar to those described in the literature (N. Bertschy, personal communication, August 29, 2016). The possible barriers were stated to be time and lack of knowledge about how to effectively deliver self-management education. Bertschy also reported that diabetes self-management education was not being documented on diabetes flow sheet by IPCP team. This lack of documentation diabetes self-management education was believed to confirm the need for the IPCP team members’ DSME re-education and reinforcement (N. Bertschy, personal communication, August 29, 2016). A Cincinnati Health Department quality improvement staff member also confirmed IPCP team should be documenting disease-specific education such as diabetes self-management education on Patient-Centered Condition (PCMH) flow sheet form (M. Daniels, personal communication, September 1, 2016). This staff member noted IPCP team members were not completing one of the processes on the flow sheet, item
number 13, that documents the provider gave education for disease-specific self-care or self-management. It was also reported that printed educational material to give to patients about diabetes/stroke signs and symptoms and risk factors were not consistently available to staff on site (M. Daniels, personal communication, September 1, 2016). Healthcare providers must be knowledgeable about DSME techniques and skills. Knowledge of specific diet, physical activity, obesity, and smoking cessation is necessary to provide adequate education and improve outcomes (Nam et al., 2011).

Significance for Major Stakeholders

As noted earlier in this chapter, the Cincinnati Health Department (CHD) health centers and public schools provide health care for Cincinnati’s most underserved, low-income, vulnerable population (Cincinnati Health Department. 2016). This Doctor of Nursing Practice (DNP) project took place in CHD health center in Millvale neighborhood. This project was in collaboration with the City of Cincinnati Health Department and Xavier University School of Nursing. The CHD is a macro system comprised of microsystems such as the health centers and public schools that are providing care for the residents of the city. There are multiple stakeholders associated with the project; including the residents of Millvale who participated in this project (a convenience sample of patients with diabetes with A1C 8% and higher and their families, the IPCP team members, and CHD administrators, as well as the taxpaying residents of Cincinnati.

Summary

The current state of diabetes is a major population health concern. The co-morbidities of hypertension and obesity have contributed to the concurrent epidemic of diabetes. The need for diabetes self-management education that is focused on strategies to engage and encourage
patients to actively participate in the decision-making of their care was presented in this chapter. The DNP student educated the IPCP team in best practice on diabetes self-management education. The IOM *Future of Nursing* committee report recommends that health professional work together in an interprofessional team to communicate best and address the needs of patients (IOM, 2010). Millvale’s nurse administrator identified the need for DSME at the Millvale Health Center due to a large population (158) of patients with poorly controlled diabetes. The desired outcome from the DSME intervention with the IPCP team on patient DSME (P-DSME) was an increase in the rate of patients’ receiving P-DSME to improve self-management of their disease. The increased provision of P-DSME was measured by an increase in diabetes self-management education documentation, the quality measure for this project. Chapter 2 reviewed relevant literature related to this DNP project and described the Model for Improvement, Adult Learning Theory, and Social Determinants of Health used as its framework.
Chapter 2 - Literature Review and Theoretical Framework

In this chapter, the author provides a review of the current literature on self-management education as it related to patients with type 2 diabetes (T2D). A literature search performed used CINAHL, Cochrane, PubMed, MEDLINE, and ERIC databases. (See Table 1). This process involved reviewing titles, abstracts and full-text articles for relevance to the topic. Keywords searched using Boolean/Phase AND, OR, and NOT were: diabetes self-management education, diabetes self-care, Type 2 Diabetes, chronic care model, interprofessional collaboration, patient-centered medical homes, barriers, and low income. Additionally, a hand search was done to obtain studies. Inclusion criteria were adults, written in English language, published between the years 2009-2017 and advanced nursing practice and diabetes clinical standards and guidelines. In some searches, publication dates were restricted to the last five years (2012 to 2017). Appraisal of the research evidence combined integration of current best evidence and applying the classification of recommendations and level of evidence. Definition of classes and level of evidence developed by the American Diabetes Association rates the quality of evidence-based on recommendations (Tricoci, Allen, Kramer, Califf, & Smith, 2009).

Letters A, B, C, or E show the evidence level that supports the recommendation: A=high quality, B=good quality, reasonably consistent results. The strength of the evidence was rated by the hierarchy of evidence developed by Melnyk and Fineout-Overholt (2012). Level 1 is the strongest evidence from systematic reviews and random control trials (RCT) and whereas level V11 is the weakest and includes expert or group opinion. (See Table 2).

The theoretical frameworks of the project are the Social Determinants of Health and Adult Learning Theory were described. This literature review began with a definition and description of self-management. Next, a discussion of diabetes self-management education and
the role of patient-centered medical home (PCMH) coordinated by care providers were describe. Lastly, the theoretical frameworks are discuss by this author.

**Diabetes Self-Management Education and Support**

Diabetes is a chronic disease that necessitates gaining essential skills and knowledge in self-care such as eating healthy, medication management, blood glucose testing, being active and other aspects of the management of this disease (AADE, 2010). Teaching problem solving (self-management education) provides skills to patients with chronic diseases such as diabetes to make decisions about their lives (Powers et al., 2015). The education on diabetes self-management impacts outcomes, including reduction of frequent hospitalizations and even death (Powers et al., 2015). Diabetes self-management education also addresses problem-solving, which in turn reduces hospitalizations, improves the quality of life and reduces early death. (Powers et al., 2015). For persons with diabetes, quality of life can be measured by physical and social functioning as well as perceived physical and mutual well-being (Agborsangaya, Lau, Lahtinen, Cooke, & Johnson, 2013; Rubin & Peyrot, 1999). Interprofessional Collaborative Practice (IPCP) members are an integral part of a team who can provide support and apply cognitive and behavioral skills, psychosocial knowledge, and pedagogy to enable patients to manage their disease and confront future challenges successfully (Burke, Sherr, & Lipman, 2014; Hass et al., 2012).

In literature from the mid -1960’s, the term self-management education was associated with chronically ill children (Lorig & Holman, 2003). The term self-management education support has evolved over the years. Self-management education is currently seen as a strategy that is used by care providers to help individuals with chronic conditions better understand and manage their disease and improve their behaviors (Grady & Gough, 2014).
Self-management is considered to be a process. In general, it is viewed as the processes required to take action on a daily basis to manage one's illness (Moore et al., 2016). The terms self-management, self-care, and self-support are used interchangeably in reference to chronic disease or disease-specific patient education programs (Moore et al., 2016). These definitions conceptually overlap. Self-support is defined as the decisions and behaviors in which patients with chronic illnesses engage in self-management practices that affect their health (Moore et al., 2016). The overarching goal is to empower and prepare patients to manage their health (Bennett, Coleman, Parry, Bodenheimer, & Chen, 2010; Powers et al., 2015). The definition of self-management has evolved from a patient’s ability to actively self-care (Creer, Renne & Christian, 1976) to that of Corbin and Strauss (1988), who included medical, behavioral, or emotional aspects of self-management in their definition. Lorig and Holman (2003) also highlighted self-efficacy, skill building, and emotional management as self-management processes. Recently, Grey, Schulman-Green, Knafl, & Reynolds (2015) showed the interactions of the individual with their family members affect outcomes in chronic conditions. The ultimate goal of self-management is to teach the behaviors and skills to manage a health condition successfully and change or eliminate the behaviors that do not. From a patient’s perspective, self-management involves the tasks, decisions, and action plans to manage their disease (Powers et al., 2015).

A recent shift in diabetes self-management is focused on engaging and empowering patients with diabetes to manage their disease successfully and improve their quality of life (Burke, Sherr, & Lipman, 2014). Diabetes is a complex and challenging disease to manage on a daily basis. Healthcare providers should move from instructor-centered teaching to patient-centered learning through which patients with diabetes can gain knowledge and skills essential to managing their diabetes and prevent its complications (Carver & Jessie, 2011). The IPCP team at
the Millvale Health Center is composed of a Family Nurse Practitioner, Registered Nurses, a Pharmacist and a Social Worker is essential in providing collaborative care that assists the patients in managing their illness. The American Association of Diabetes Educators has identified seven essential self-care behaviors known as the AADE7 (American Association of Diabetes Educators [AADE], 2010). The risk of complications is increased in patients with diabetes. These self-care behaviors are critical to reducing and preventing diabetes-related complications (Kent et al., 2013). In 2011, the American Association of Diabetes Educators Symposium on reducing risks in diabetes translated evidence into diabetes self-care management education. The symposium participants findings from the literature revealed that interprofessional team members are an integral part of providing individualized education to promote change in behavior and lifestyle (Kent et al., 2013). The AADE7 is a tool to assist healthcare providers in providing key important topics related to diabetes.

The American Diabetes Association (ADA) has established standards of care and recommends a team approach that recognizes DSME and support and takes into consideration patient’s age, cultural differences, physical activity, eating habits, work status and other related complications of diabetes (The American Diabetes Association [ADA], 2014). There is evidence that P-DSME can increase knowledge, modify self-care behaviors and improve outcomes such as lower AIC and reduce the related complications of diabetes (Gumbs, 2012). However, research is scant in this area with ethnic group of women, and the IPCP team may lack knowledge and understanding about this target population to sufficiently engaging patients (Gumbs, 2012). It is important that healthcare providers include cultural assessment in care to decrease complications and improve quality of care in ethnic groups (Gumbs, 2012).
The National Standards for Diabetes Self-Management Education are designed to assist healthcare providers in providing evidences-based care (Hass et al., 2012). The primary goal of DSME is to prevent acute and chronic complications associated with diabetes, and ultimately, achieve the quality of life while decreasing cost (Haas et al., 2013). Diabetes Self-Management Education and Support is considered the cornerstone of care for patients with diabetes. However, it has been reported that 57.4% of people diagnosed with diabetes have not attended a DSME class (Rui et al., 2014). Despite the fact that nationally, self-management education has demonstrated reduced costs while improving patient care and chronic disease management in disorders like diabetes (CDC, 2015).

**Evolution of Diabetes Education**

The updated definition of the National Standards for Diabetes Self-Management Education and Support describes the ongoing process of teaching persons with diabetes. Diabetes Self-Management Education helps individuals to gain the knowledge and skills to manage their disease (Haas et al., 2013). The name change is intended to address the significance of ongoing support that must be given to patients beyond the office visit. Ongoing support is particularly needed to encourage change and maintenance of lifestyle behaviors. Diabetes self-management education and support are paramount to care (Hass et al., 2012). The DSME standards apply to educators and IPCP team members in clinical settings. Diabetes education differs from diabetes support in that DSME objectives are to support decision-making, behaviors changes, problem-solving and partnering with the health providers to improve patient outcomes (Haas, et al., 2013). Diabetes Self-Management Support refers to the ongoing support for implementing and sustaining skills and behaviors for patients with diabetes to manage their condition (Haas et al., 2013).
Several studies have documented the benefits of ongoing DSME in reducing A1C (Caspersen, Thomas, Boseman, Beckles, & Albright, 2012; Collins-McNeil et al., 2012; Duncan et al., 2011; Hass et al., 2012; Thorpe, 2012). Others show no benefits from DSME (Shaw, Killeen, Sullivan, & Bowman, 2011; Khunti et al., 2012). One study (Shaw, Killeen, Sullivan, & Bowman, 2012), who reported outcome disparities for the uninsured and underinsured due to limited access to quality DSME. Disparities in access contribute to increased risk of developing complications in this vulnerable population. Khunti et al., 2012, findings revealed no improvement in lifestyle outcome in a single education program for individuals with Type 2 diabetes. Most of the DSME programs are valuable in promoting behavior change (Burke, Sherr & Lipman, 2014). The Diabetes Attitudes, Wishes, and Needs2 (DAWN2), an international program, provides a holistic assessment of people with diabetes. A report on this program describes the importance of healthcare providers understanding psychosocial problems that may be barriers to diabetes management (Peyrot et al., 2013). An additional international study documented informal support in self-management effectiveness in vulnerable populations (Koetsenruijter et al., 2016).

Diabetes self-management education is associated with improved patient outcomes such as lower A1C, reduced weight, improved quality of life, healthy coping skills and lower cost (Brunisholz et al., 2014). In a study by Healy, Black, Harris, Lorenz, and Dungan, (2013), reduced costs and less frequent hospital readmissions were reported in African American, Medicaid or Medicare patients with poor glycemic control who received inpatient diabetes self-management education. Tang, Funnell, & Oh (2012), in a study of African American (hospital, clinic, and community) patients, reported significant lower A1C after a two years self-management education and support. Some elements reported in the study contributing to lower
A1C were, making good nutritional choices, reduced carbohydrates consumption, and medication adherence. In addition to lower blood glucose, reductions in blood pressure, cholesterol and weight were reported, thus supporting the benefits of DSME (Tang, Funnell, & Oh (2012). Finally, one meta-analysis study highlighted the role of interprofessionals in effectively delivering patient-tailored diabetes education (Steinsbekk, Rygg, Lisulo, Rise, & Fretheim, 2012). The implication for nurses using DSME in their practice setting is to provide comprehensive and competent care. Comprehensive, competent care addresses the patient’s cultural needs, health beliefs, current knowledge, medical history, family support, psychosocial needs and health literacy, along with other factors that may influence a person’s ability to self-manage their disease (Powers et al., 2015).

A study about healthcare providers’ education of patients with T2DM sought to determine if healthcare providers’ support in addition to education could influence patients’ motivation to self-manage their disease (Oftedal, Karlsen, & Bru, 2010). The study outcomes revealed that healthcare providers should provide ongoing motivational support that is individualized, empathetic and practical (Oftedal, Karlsen, & Bru, 2010). Several themes were identified in this study that patients with T2DM perceived helped motivate them to manage their disease: (1) empathy, (2) practical advice, (3) involvement in decision-making, (4) individualized information and (5) ongoing support (Oftedal Karlsen, & Bru, 2010). This study suggests patients need support from health care providers, in addition to education, which is tailored to their individual needs.

**The Patient-Centered Medical Home Model**

The Patient-Centered Medical Home (PCMH) model provides primary care based on patients’ needs. The Patient-Centered Medical Home (PCMH) model of care delivery ensures high quality,
cost-effective, and patient-centered care and is promising for future replication (Lipson, Rich, Libersky, & Parchman, 2011). Through this approach, an interprofessional team provides comprehensive care across the continuum of life, managing chronic diseases such as cardiovascular, diabetes and stroke and providing patients with preventive health education (Summary of PCMH Laws, 2013).

The Millvale Health Center is a patient-centered clinic and incorporation of diabetes self-management education strategies would benefit the patient with diabetes. Nurses’ role in the promotion of health involves proper knowledge of diseases and their treatment, but also awareness of the social factors influencing health. Knowledge of the social determinants of health informs holistic caring for patients with a chronic disease like diabetes outcomes (Braveman, Egerter, & Williams, 2011; Braveman, Dekker, Egerter, Sadegh-Nobari, & Pollack, 2011).

The DNP student set a goal of this project to increase the provision of patient diabetes education documentation, the outcome measure. The desired outcome is an increased rate to 10 per 10 charts at the end of the project. The overall result is the impact of the collaborative effort of providers and patients to address adherence and improve patients’ specific barriers to change behaviors. One study defined “adequate” adherence as 80% (American Diabetes Association [ADA], 2016). The operational definition described in this study, established a rate of 5 out of 10 charts documentation by the IPCP team, with the goal of increasing the rate of 10 out of 10 charts in the real clinical setting was reasonable.
Social Determinants of Health Framework

The Social Determinants of Health framework provides an understanding of the living conditions and other social, economic and cultural factors that impact the health of patients. Social determinants affect how one lives, and impact health outcomes (Hill, Nielsen, & Fox, 2013). Social determinants of health play an important role in the Millvale population where the majority of residents are living below the poverty level line and meet the criteria for classification as a vulnerable population. Among the social determinants of a vulnerable population are being part of a minority population, poverty level income, lack of education, lack of accessibility to healthy foods and living with more than one illness. Each of these social determinants negatively affects health outcomes, and in combination, vulnerability increases (Braveman, Egerter, & Williams, 2011).

The Millvale Health center IPCP team must take into consideration the social, cultural, economic and physical factors affecting their patients’ health. Re-educating the IPCP team includes increasing awareness of health determinants in assessing and planning an effective intervention for the patients. The team must be knowledgeable of multiple factors including environmental factors such as resources availability, quality of schools, safe and livable housing environmental factors, clean air, clean water, healthy foods and access to healthcare. These conditions affect self-care/management, quality of life and risk of poor health outcomes in patients with diabetes in this project.

Adult Learning Theory

An additional theoretical framework for this DSME project is the adult learning theory (Knowles, Holton, & Swanson, 1973). For patients with diabetes to comprehend diabetes
education, information should be presented in a comfortable environment, and in a language that is familiar to both the patient and the educator. The health care provider who is presenting the information should have an understanding of how to engage the patient in managing their disease. In this DNP student’s role as a leader, it is her responsibility to use effective management concepts and theories related to the adult learner in educating healthcare providers. There is no one theory that is best for patient education or provider’s education. Malcolm Knowles popularized the adult learning theory. The IPCP team will be informed that the most important thing to help adults learn is to create a climate of respect, trust, openness and acceptance of differences (Knowles, Holton & Swanson, 1973). Adults need to know how they will benefit from the education and must be self-directed in their learning. As with any disease, patients want to learn to remain independent and lead as normal a life as possible. As a result diabetes self-management education and strategies for preventing diabetes complication given to patients by healthcare providers are important to patients’ future and quality of life.

**Summary**

In chapter two, a literature review of diabetes self-management education was provided by the DNP student. Self-management education is a process of providing knowledge to a person with chronic disease to manage their disease. Self-management education is a collaborative effort between healthcare providers and patients living with chronic diseases. Self-management education research has documented the benefits of DSME in improving glycemic control, by demonstrated a reduction in A1C and improvement in the quality of life. Diabetes management has shifted from only education, to include support in decision making that focuses on empowering patients with chronic disease such as diabetes to manage their disease to reduce or prevent related complications. The IPCP team provided the knowledge and skills needed to
enable patients to manage daily and potential challenges. The patient is the ultimate self-manager of their illness. Like any skill, active self-management must be learned. The healthcare providers give guidance to help patients successfully manage their health condition and tasks within their life. The patient-centered care model provided an interprofessional approach that ensures quality, cost-effective and patient-centered care. Finally, social determinants of health and the use of adult learning theory during the provision of DSME were discussed by the student as frameworks for this DNP quality improvement project. In Chapter 3 the author described the methodology used to conduct this DNP project.
Chapter 3 - Methodology

The objective of this DNP project was to increase the frequency of Diabetes Self-Management Education (DSME) patient education provided by an interprofessional collaborative practice (IPCP) team. As noted in Chapter 1, diabetes is a major health concern and has an increasing prevalence in the United States and Millvale. The role of the IPCP team for this project is essential in educating and engaging patients with Type 2 diabetes in self-care. In Chapter 1, the problem and its significance were introduced by the DNP student. In Chapter 2, the author provided a review of the literature on diabetes self-management education and support of patients with Type 2 diabetes, the evolution of diabetes education and the patient medical home model. Social determinants of health and adult learning theoretical theory frameworks for this project were also discussed by the student. Chapter 3 includes the project design, setting, needs assessment, market analysis, strategic analysis, financial plan, data analysis, evidence-based project intervention plan, timeline, resources and the evaluation plan.

Setting

The setting for the project was a Millvale neighborhood health center. The neighborhood health center is one of seven Cincinnati Health Department (CHD) federally qualified primary care clinics in an urban area of Cincinnati. The population for this project consists of five IPCP team members that regularly care for patients with poorly controlled Type 2 diabetes, with an A1C of 8% or higher. An integral part of the standard of care for the diabetes population is the provision of DSME to the patients with diabetes (Haas et al., 2012).

In 2014, seven Cincinnati Health Department (CHD) primary care centers received the designation as a federally qualified health centers (FQHCs). The Millvale Health Center is one of the seven CHD FQHCs. In the PCMH model of care, IPCP team members partner with patients...
and families to manage their illness (HRSA, n.d.). The focus of PCMHs like the neighborhood Millvale Health Center is the collaboration and provision of high quality and safe care, and the assessment and early management of health problems ((HRSA, n.d.). The CHD is a governmental organization that serves medically underserved population or area and provides primary and preventive care (Health Resources and Services Administration [HRSA], n.d.)

**Needs Assessment**

In 2015, the Director of the Nursing at the CHD identified the Millvale neighborhood health center with the most patients with elevated A1C, poorly controlled. This large number of patients (158) with a high A1C greater than 8% created the need for this DNP quality improvement project’s targeting IPCP team member’s provision of DSME interventions. The current diabetes flowsheet was not used by the IPCP team members to track documentation of diabetes education. Chart audits conducted by the DNP student revealed no documentation of DSME and lack of performance in the National Committee for Quality Assurance (NCQA) guidelines specific for best practice in diabetes care management, especially for documentation of diabetes education and accreditation. This DNP student was prompted to educate the IPCP team members on the American Association of Diabetes Educators seven tool in the provision and documentation of diabetes education to high-risk patients with diabetes.

**Market Analysis**

The operation of the CHD is dependent on various sources including state and federal grants, but is primarily funded by city and county local taxes (Cincinnati Health Department, 2016). The city and county revenue from these taxation sources have decreased as the result of the failing economic growth in recent years (Policy Matters Ohio, 2012). There continued to be drastic budget cuts in the local governments in the fiscal year 2016-17 (Policy Matters Ohio,
These cuts have led to staff layoffs resulting in higher patient/staff ratios (Department for Professional Employees [DPE], 2016). These higher patient/staff ratios, in turn, result in less time per patient, and the need to prioritize higher-risk patients for care. These ratios decrease the time available to provide preventive care and may have a long-term negative effect on the health of the community (DPE, 2016). The substantial cost reduction in the budget has CHD leaders searching to find more efficient and cost-effective ways to provide for the needs of the population it serves (N. Bertschy, personal communication, August 29, 2016). Once the staff are better prepared and confident using P-DSME, they can more effectively target their interventions, and less time will ultimately be required during clinic visits. The DNP IPCP-DSME project is in alignment with the CHD strategic plan to improve the health and wellness of its residents. Studies show that effective patient diabetes self-management reduces complications and health care cost (Caspersen et al., 2012; Thorpe, 2013).

**Strategic Analysis**

When addressing health conditions among Cincinnati’s high-risk, underserved populations, the CHD strategic plan for chronic disease management identified specific neighborhoods in the community in need of improved health and well-being. The Millvale neighborhood was recognized as one of the areas in need of improvement in diabetes care management by the Director of Nursing at the CHD. The large number of patients (158) with high A1C greater than 8% created the need for this DNP project’s targeted IPCP-DSME program.

**Financial Plan**

The Health Resources and Services Administration (HRSA), Nurse Education Practice Quality and Retention-Interprofessional Collaborative (NEPOR-IPC) grant from Xavier School
of Nursing will financially support the DNP student’s diabetes education project at the Millvale Health Center. The effectiveness of delivery processes to improve self-management in diabetes care has been documented. The issue of sustainability without increasing cost or decreasing the quality of care is a financial concern in many organizations (Johnson, Richards & Churilla, 2015). The DNP student will work with the CHD nursing administrators, a quality improvement team member and other stakeholders in the CHD to put plans in place to sustain the P-DSME program after the completion of the DNP project and the startup grant funding ends.

Given the documented effectiveness of diabetes self-management interventions nationally, the CHD organization is supportive of a program that may positively improve the quality of patient care, reduce costs and produce the greatest benefit for their patients (N. Bertschy, personal communication, August 29, 2016). Additionally, if over time, improved glycemic control (A1C levels below 8 %) is evident in patients who have poorly controlled diabetes after the successful implementation of IPCP-DSME and P-DSME programs at the Millvale Health Center, these programs can be spread to other CHD health centers. The CHD currently is interested in replicating successful DSME interventions in other local clinics (N. Bertschy, personal conversation, September 1, 2016).

**Data Analysis**

The Institute for Healthcare Improvement (IHI) Model for Improvement Plan-Do-Study-Act (PDSA) cycle method was the quality improvement design used for this project (Institute for Healthcare Improvement [IHI], 2017; Langley, 2009). The Model for Improvement design has been used to successfully accelerate process improvement work by numerous health care organizations (IHI, 2017; Langley et al., 2009; Provost & Murray, 2011). Plan-Do-Study-Act (PDSA) cycles are small tests of change, conducted in a “real world” setting (Langley, 2009).
The diabetes quality measure was defined by the rate of Patient DSME (P-DSME) documentation by the Interprofessional Collaborative Practice (IPCP) team for patients aged 22 through 81 years with type 2 diabetes (T2D) with hemoglobin A1C (HbA1C) 8% or higher. The operational definition of the outcome measure was used to define data points on the run chart. It is important to note the same operational definition was used to define data points on run charts throughout the project. The operational definition is described as follow:

1. **Denominator:** Patients with T2D, 22-81 years old, with A1C 8 or higher seen in the Millvale clinic over the past week **Numerator:** The number of “yes” documented on the diabetes flow sheet in the electronic health record (HER) clinic chart

2. **Measure:** Rate of clinic charts with completed DSME

3. **Population targeted:** Patients 22 to 81 years of age with a diagnosis of T2D and a HbgA1C level 8% or greater

4. **To obtain baseline data:** The first 12 data points before the intervention established a baseline median (Anho, 2015; Perla, Provost & Murray, 2011)

5. **Goal:** 100% increase in P-DSME documentation

6. **Project Aims:** To increase the frequency of the provision of DSME to individuals with diabetes and its documentation by the IPCP team in the EHR flowsheet at the Millvale Health Center.

Baseline data were obtained before initiation of the project. The number of data points collected were displayed on the run chart to establish a baseline based on IPCP documentation of Patient DSME (P-DSME) on the diabetes flow sheet. The x-axis of the run chart represents clinic days as the date of visit, and the y-axis represents the rate of documented DSME per 10 charts. The assumption was there was no or minimal provision and documentation
of IPCP DSME of P-DSME being done. Retrospective chart review was conducted for ten clinic days before the intervention for patients with type 2 diabetes, A1C 8% and greater at the Millvale Clinic. The provision of DSME is accomplished through the collaboration with the patient and the IPCP team members; e.g. the family nurse practitioner, registered nurses, pharmacists, and social worker. The retrospective chart review verified the assumption was correct; there was no documentation of the provision of P-DSME in the EHRs. The baseline median line was displayed on the run chart, representing the aggregate for all IPCP team members.

Following the establishment of the baseline, the IPCP-DSME education session was conducted by the DNP student. The post education intervention data collected were obtained through EHR chart review of patients seen by IPCP team member each week to ascertain provision and documentation of P-DSME. To conduct the chart reviews, the DNP student received a list of patients who had diabetes clinic visits the prior week and who met the project criteria from the Millvale clinic nurse administrator. The patient synopsis data received included the electronic health record (EHR) number of the patients’ (converted to patient code number for record keeping), and date of the recent clinic visit. The student reviewed the current visit to verify if there were documentation of DSME for the previous visit and what DSME topic is present.

The first test of change (PDSA cycle) was conducted post education session with the IPCP team. The first PDSA cycle determined there was a change in providers’ behavior in providing and documenting P-DSME. The group education session showed positive results, and when the measure began to move to accomplish the aim, the first cycle was completed. However, the improvement was not sustained, and a new PDSA cycle was initiated. In the second PDSA
cycle, the DNP student provided one on one reinforcement of documentation that was present, and additional education when it was not to individual care providers. The second PDSA cycle with one on one reinforcement or additional education reminders moved the measure towards the intended outcome measure. After the desired outcome measure was achieved, there was no need to test and evaluate a different approach in a new cycle. The run chart annotated accordingly, indicating when and what tests of change were initiated. The annotation on the run chart of P-DSME documentation displays each week’s result, and the date that each test of change intervention was implemented and its outcome; e.g., the rate of patients with completed documentation. (See Appendix F).

The DNP student asked IPCP team members during each PDSA cycle about barriers to providing P-DSME. The barriers expressed by the IPCP team members were documented, and content analyzed, using a qualitative conventional approach. In conventional content analysis, the categorical codes come directly from the qualitative data that has been collected from the participants (Hsieh & Shannon, 2005). As noted, in this project, these data were the IPCP team members’ expressed barriers to the provision and documentation of DSME. Themes in their barriers to care were identified and reported were lack of training about DSME documentation on the diabetes flowsheet, lack of documentation of DSME plans and goals in collaboration with patients, lack of time to document P-DSME, lack of educational materials on site, and resources for self-management support.

The frequency data from the diabetes flow sheet documentation were presented in a run chart that displayed trends in improvements in the documentation that may had occurred in the provision of P-DSME by the IPCP team following the IPCP-DSME intervention. Below is a visual representation of the run chart.
Figure 1.

Run Chart of IPCP Documentation
The established rules of run charts were followed to analyze the results. The four rules for a run chart to determine if a change has led to improvement are a shift, trend, number of runs and astronomical point (Langley, 2009). A shift is if more than six data points are either above or below the median line; values that fall on the median do not count as a shift (Langley, 2009). A trend is five or more data points making a downward or upward trend (Langley, 2009). The number of runs require a table; the number of run is compared to a standard for run charts to determine if too few or too many runs (IHI, 2017; Langley, 2009). The last rule is an astronomical data point that detects an unusual value or huge spike in data (Langley, 2009).

**Evidence-Based Project Intervention Plan**

As already indicated in Chapter 2, the evidence supports that targeted DSME improves patient outcomes, including reduction of frequent hospitalizations, lowering of diabetes complications, and death (Powers et al., 2015; Kent et al., 2013). The goal for this evidence-based intervention project is to increase the provision and documentation of P-DSME in patients with Type 2 diabetes whose A1C levels are 8% or greater. The project’s intervention is to educate the members of the CHD Millvale Health Center’s IPCP team on DSME and the importance of providing and documenting of P-DSME. The DNP student received a list of patients with A1C 8% and higher in the past six months at the Millvale Health Center from the nurse administrator. The DNP student established a baseline of documentation of P-DSME on the flowsheet of patients with A1C 8 % and higher from the list of patients given by the nurse administrator. The IPCP team participated in the IPCP-DSME session conducted by the DNP student to review diabetes self-management education, and the importance of its provision and documentation. The education session provided current evidence-based practice
recommendations for patients with type 2 diabetes. The education session also provided current
evidence-based knowledge on diabetes self-management. The AADE DSME topics and the
diabetes self-management education flow sheet currently used for documentation of DSME were
reviewed. The AADE7 consist of low literacy, one-page tear off sheets on each of seven topics.
The AADE7 DSME topics reviewed in the IPCP-DSME session included Healthy Eating, Being
Active, Monitoring Blood Sugars, Taking Medications, Problem Solving, Healthy Coping and
Reducing Risks (See Appendix A). The IPCP-DSME education intervention lasted
approximately 30 minutes, after which the IPCP team members had the opportunity to ask
questions.

As described in an earlier chapter, baseline, and post-intervention data were obtained
during the chart reviews to ascertain compliance with documentation of P-DSME. When
subsequent chart reviews following the IPCP-DSME session revealed continued deficiencies in
documentation, the DNP student provided additional one-on-one education to IPCP team
members on the importance of P-DSME provision, and the use of the AADE7 DSME tools to
assist them in providing patients with information on the topics essential to diabetes self-
management.

While the AADE topics areas listed above provide an outline for the education session, it
is important that the content is tailored to meet the patient’s needs and be adapted as necessary
for age, cultural factors, health literacy and comorbidities (Haas et al., 2012). Although there are
commonalities, each patient situation has distinct characteristics that require the IPCP team to
approach each patient without making assumptions as to the patient’s and family’s background,
resources, and capability to learn to improve health outcomes. There is evidence that P- DSME
can increase knowledge, modify self-care behaviors and improve outcomes such as lower AIC
and reduce the related complications of diabetes (Gumbs, 2012). The IPCP team may lack knowledge and understanding about ethnic population to sufficiently engage patients from (Gumbs, 2012). The IPCP- DSME included information about cultural and health beliefs that impact care, and P- DSME interventions that address dietary practices in ethnic population.

A critical element in the teaching process is mutually establishing goals, so that patient, family, and staff are working together to achieve a common goal (short or long term). Another aspect of the education process is to engage patients to identify their concerns, questions, and priority needs, to help them attain their health-related goals. The importance of patient factors such as age, race, culture, health beliefs, and those described in Maslow’s Hierarchy of Needs are additional topics to be incorporated in the education of the IPCP team (Bastable, 2014; Melnyk, & Finehold-Iverholt, 2010; Powers et al., 2015).

**Project Timeline**

Various activities were required to complete the DNP scholarly project. The following table outline various activities and dates.

<table>
<thead>
<tr>
<th>Activities</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
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<tr>
<td>Submit and defend DNP proposal</td>
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<td>Apply for IRB</td>
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<td>Provide diabetes self-education management education session to IPCP team</td>
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<tr>
<td>Collect baseline and current visit data from P-DSME flow sheet</td>
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<tr>
<td>Re-educate /reinforce IPCP team on DSME and flow sheet documentation</td>
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<tr>
<td>Analyze data</td>
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<tr>
<td>Disseminate results</td>
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Resources

Diabetes Self-Management Education (DSME) provides individuals with necessary knowledge and skills to bring about lifestyle changes and successfully manage the disease. There are several resources available to implement evidence-based practice (EBP) within the Millvale Health Center. Educational resources are the American Association of Diabetes Educators (AADE) 7. The AADE has identified seven behaviors for effective self-management. Another essential resource is the National Standards for Diabetes Self-Management Education and Support. The National Standards are designed to assist healthcare providers in providing evidenced-based care (Hass et al., 2012). Personnel resources are the Millvale Health Center IPCP team members. The interprofessional collaborative practice (IPCP) team for this project consisted of a Family Nurse Practitioner, a Registered Nurse, a Pharmacist and a Social Worker. The IPCP team members played a pivotal role in providing the DSME for this project in the CHD organization. The IPCP team members were educated on DSME to ensure competent diabetes care. Technical resources included the electronic privacy information center (EPIC) electronic record system at Millvale Health Center, HIPAA training, and use of Excel and run charts in data collection.

Evaluation Plan

In this DNP project, the student evaluated the plan to determine if the IPCP team members’ documentation of DSME increased as a result of the IPCP-DSME educational intervention. The results of the weekly examination of the diabetes flowsheets were analyzed for improvement, trends, or the need for an educational intervention and initiate a new PDSA cycle. The frequency data from the EHR diabetes flowsheet documentation analysis were presented in a run chart to display trends in improvements in the documentation that may have occurred in the
provision of P-DSME by the IPCP team following the IPCP-DSME intervention. The run chart was also used to display whether or not the targeted 50% increase in documentation following the educational intervention for IPCP team members was achieved.

The DNP student also evaluated patterns that may exist in the IPCP team members’ perceived barriers to the provision of DSME. As the data from this project were reviewed, patterns and barriers were identified. For instance, the DNP student’s chart review revealed whether the IPCP team members performed and documented their DSME assessments, and if all seven topics were evaluated throughout the project. Potential barriers identified in the literature were a lack of training about DSME, time constraints, style of teaching, lack of cultural sensitivity, and lack of educational materials may occur (Nam et. al., 2011). During the data gathering process, the DNP student performing the study took note of the patterns and barriers that occurred and documented these in the Diabetes Self-Management Education Data Collection Sheet (Appendix D).

**Project Implementation**

The Institute for Healthcare Improvement (IHI) Model for Improvement Plan-Do-Study-Act (PDSA) cycle method was the quality improvement design used for this project (Langley, 2009; Institute for Healthcare Improvement [IHI], 2017). The Model for Improvement design has been used to successfully accelerate process improvement work by numerous health care organizations (Langley et al., 2009; IHI, 2017). PDSA cycles are small tests of change, conducted in a “real world” setting (Langley, 2009).

This PDSA design presents a process for increasing the provision of diabetes self-management education by the IPCP team at the Millvale Health Center. The outcomes of this process improvement measure were evaluated by an increase in the documentation on the DSME
flow sheet in the patient’s chart. The project planning team for this DNP project determined the review of the EHRs of 25 plus Millvale Health Center patients with diabetes and A1C greater than 8%, who are consecutively visiting the clinic for routine diabetes clinic visits, was adequate to show if there were improvements in the IPCP team’s provision and documentation of P-DSME. The PDSA process was as follows:

- **Plan** - Define the intervention that will be tested to achieve the aim, and plan for data collection
- **Do** - Implement the intervention on a small scale,
- **Study and Analyze** - Examine the effects and outcomes of the interventions, and
- **Act** - Based on the results of the data collected, spread the plan if positive results occurred, or revise the plan and begin the PDSA cycle again (Langley et al., 2009).

The model for Improvement Plan-Do-Study-Act used a key driver diagram that visually displayed the project’s activities to achieve the aim. The key driver for this quality improvement project can viewed in Figure 1: Key Driver Diagram.
Figure 2.

**Key Driver Diagram**

<table>
<thead>
<tr>
<th><strong>Aims:</strong></th>
<th><strong>Key Drivers:</strong></th>
<th><strong>Interventions:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase proportion of patients with diabetes self-management education (DSME) from a rate of 0 to a rate 10 by September 4, 2017</td>
<td>IPCP team readiness to accept responsibility for DSME</td>
<td>Educate IPCP team on importance of DSME</td>
</tr>
<tr>
<td></td>
<td>DSME content</td>
<td>Evidence-based approach to DSME</td>
</tr>
<tr>
<td></td>
<td>Knowledge of Flowsheet in EPIC</td>
<td>Flowsheets check for DSME documentation by IPCP team</td>
</tr>
<tr>
<td></td>
<td>IPCP documentation</td>
<td>Diabetes Education documentation in EPIC</td>
</tr>
<tr>
<td></td>
<td>IPCP team time to initiate DSME</td>
<td>Educate IPCP team on key topics related to diabetes support management</td>
</tr>
</tbody>
</table>

**Global Aim**

Blood pressure control in HTN

Hgb AIC < 8 in patients with diabetes

Source: (Langley et. al., 2009)
Project Design

The Institute for Healthcare Improvement (IHI) Model for Improvement Plan-Do-Study-Act (PDSA) cycle method will be the quality improvement design used for this project (Langley, 2009; Institute for Healthcare Improvement [IHI], 2017). The Model for Improvement design has been used to successfully accelerate process improvement work by numerous health care organizations (Langley et al., 2009; IHI, 2017). PDSA cycles are small tests of change, conducted in a “real world” setting (Langley, 2009).

This PDSA design presents a process for increasing the provision of diabetes self-management education by the IPCP team at the Millvale Health Center. The outcomes of this process improvement measure were evaluated by an increase in the documentation on the DSME flow sheet in the patient’s chart. The PDSA process was as follows:

- Plan – Define the intervention that will be tested to achieve the aim, and plan for data collection
- Do- Implement the intervention on a small scale,
- Study and Analyze – Examine the effects and outcomes of the interventions, and
- Act – Based on the results of the data collected, spread the plan if positive results occurred, or revise the plan and begin the PDSA cycle again (Langley et al., 2009).

IRB Approval

This quality improvement (QI) project was submitted to the Xavier University and Cincinnati Health Department Institutional Review Boards (IRB) for approval. This author’s Doctor of Nursing Practice (DNP) project did not meet the definition of “research” prescribed in the Code of Federal Regulations (45CFR46.102 (d), and did not involve research with human subjects, therefore, did not require review by the Institutional Review Board at Xavier or the
Cincinnati Health Department. The project was a quality improvement project designed to increase the provision of diabetes self-management education to patients at the Millvale Health Center rather than the development of new, generalizable knowledge, therefore, not a research project (See Appendix C).

Data Collection

Data from the EHR were recorded on a data collection sheet for this DNP project (See Appendix D). The care provider names were de-identified for the purpose of the spreadsheet. Each care provider will be coded by their professional role: e.g., Advanced Practice Registered Nurse, Registered Nurse (APRN), Social Worker (SW), and Pharmacist (RPh). When there was more than one care provider in the same role, a numeric value was added: e.g., RN1, RN2, etc. These codes were recorded on a separate spreadsheet. Each patient was assigned a code: e.g. 1, 2, 3, etc. from the data provided by the nurse administrator. After recording this information, the DNP student completed the chart review. The specific steps of the review process were:

- Using the electronic health record number from the list of patients with diabetes with completed clinic visits in the past week received from the nursing administrator, the DNP student assigned each patient a code.

- The student reviewed the diabetes self-management education flow sheet from the patient’s clinic visit the prior week. The presence or absence of P-DSME was recorded on the project spreadsheet; absence of P-DSME was coded as “0”, presence was coded as “1”. If present, the topic of the P-DSME provided was noted.

Subsequently, the DNP student obtained weekly data from the nursing administrator about patients meeting the project’s inclusion criteria with completed diabetes clinic visits the
week prior. The same chart review process was repeated. The weekly P-DSME data collection continued until the P-DSME documentation in the EHRs of all patients seen by the IPCP team members had been reviewed.

Summary

The student reviewed the PDSA cycle for quality improvement in this chapter. The goal for this DNP project was to increase the provision of DSME and DSME documentation to patients with poorly controlled diabetes. The standards for DSME used in this Interprofessional Collaborative Practice (IPCP) education intervention have been established by the American Diabetes Association Educators (AADE). These AADE DSME standards were developed to improve outcomes in patients with diabetes. These AADE DSME standards were included in the IPCP –DSME curriculum provided by the DNP student. The baseline and post-intervention data of IPCP DSME provision, and the documentation of P-DSME were obtained during chart review. Reinforcement and re-education of IPCP team on AADE 7 topics occurred weekly throughout the data collection period. The pre and post intervention data were analyzed and displayed on run charts. The DNP project outcomes were presented to the IPCP team at the Millvale Health Center. Continuous improvement and sustainability plans will be determined in partnership with the Millvale Health Center nurse administrator and IPCP team members.
Chapter 4 - Results

This quality improvement (QI) pilot project was developed and implemented in collaboration with an interprofessional team at a neighborhood health center in Cincinnati, Ohio. Results presented determined if the members of the Interprofessional Collaborative Practice (IPCP) team provision of Diabetes Self-Management Education (DSME) and DSME documentation increased on the diabetic flowsheet after an educational intervention by the DNP student. The desired outcome of the project is the IPCP team members’ application of patient diabetes self-management education knowledge. This outcome measure was evidenced by an increase in DSME documentation to patients with poorly controlled diabetes in the electronic health record (EHR). The patient synopsis data include the electronic health record (EHR) number of the patients’ recent clinic visits and demographic data. The DNP student reviewed the recent patient visit to verify if there was documentation of DSME at the recent visit, and if DSME was present. The Institute for Healthcare Improvement (IHI) Model for Improvement Plan-Do-Study-Act (PDSA) cycle method, (Study) S, in this chapter, was used to examine the effects and outcomes of the intervention.

Plan-Do-Study-Act Method

The PLAN phase- the Diabetes Self-Management Education (DSME) intervention provided to the IPCP team by the DNP student was established. The DSME aims were to increase the frequency of the provision of DSME to individuals with diabetes and its documentation by the IPCP team. The provision of DSME is accomplished through the collaboration with the patient and the IPCP team members; e.g. the family nurse practitioner, registered nurses, pharmacists, and social worker. Subsequent teaching strategies and content incorporate the needs of the
patient to empower the IPCP team members to educate patients and improve their ability to manage their illness.

In the DO phase, the DNP student provided an education session with the IPCP team. At the IPCP-DSME session, the DNP student reviewed the importance of providing P-DSME to patients with high A1C to meet their self-care needs. The student shared information about the content and use of American Association of Diabetes Educators’ (AADE) seven DSME tools (See Appendix A and extension for AADE7 information) when providing P-DSME to these patients. The didactic content of the IPCP-DSME session concluded with a review of how to document P-DSME on the diabetes flow sheet in the patient’s chart. The IPCP-DSME session outline can be found in Appendix B. The initial IPCP-DSME education session was a group session approximately 30 minutes in length.

During the STUDY phase, the DNP student evaluated improvements in the provision and documentation of P-DSME by the IPCP team after the IPCP-DSME session. Patient-Diabetes Self-Management Education documentation in the electronic health records were reviewed in a convenience sample of 30 of patients with diabetes meeting the project’s criteria (A1C 8% and higher and a previous clinic visit within the past six months) to establish a baseline. To conduct the chart reviews, after the education intervention, the DNP student received a list of patients who had diabetes clinic visits the prior week, and who met the project’s inclusion criteria from the Millvale Health Center nurse administrator.

The patient synopsis data received included the electronic health record (EHR) number of the patients’ recent clinic visit. The student then reviewed the recent visit to verify if there was documentation of DSME at the recent visit, and if DSME was present, ascertained the education topics provided to the patient. This review allowed the DNP student to complete the ACT
phase’s follow-up interventions of providing reinforcement of the importance of DSME to care providers with documented DSME, or providing re-education to care providers without documented evidence of DSME.

**Process and Outcomes**

There were planned meetings facilitated by the DNP student with the Cincinnati Health Department (CHD) administrators and the IPCP team from August 2016 to September 2017. There were four members of the IPCP team that received the education intervention by the DNP student. They were: the nurse practitioner (primary healthcare provider, a registered nurse, a social worker, and two pharmacists). The following display the Plan-Do-Study-Act cycle with process and outcome measures.

**Plan-Do-Study-Act Cycle**

<table>
<thead>
<tr>
<th>Plan</th>
<th>Do</th>
<th>Study/Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify Improvement Goal</td>
<td>Process Change to be Implemented</td>
<td>Process/Outcomes Measured</td>
</tr>
<tr>
<td>Increase documentation of Diabetes Self-Management Education (DSME) patient education provided by the Interprofessional Collaborative Practice (IPCP) team on diabetes flowsheet in the Electronic Health Record</td>
<td>1. Educate IPCP team members on the American Association of Diabetes Educators (AADE) 7</td>
<td>1. Number of IPCP trained</td>
</tr>
<tr>
<td>No or minimal DSME documentation by IPCP team members</td>
<td>2. Train IPCP team on data entry in the EHR</td>
<td>2. Increased rate of DSME documentation completed correctly in EHR</td>
</tr>
<tr>
<td>IPCP team members document Patient DSME on the diabetes flowsheet in Electronic Health Record (EHR) to ensure the consistency of the provision of competent care</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In summary, the findings of this DNP student nurse leader’s project indicated the education of the Interprofessional Collaborative Practice (IPCP) team on Diabetes Self-Management Education (DSME) increased the provision of Patient DSME (P-DSME) documentation on the diabetes flow sheet and were presented in Chapter 4. To improve outcomes in patients with poorly controlled type 2 diabetes, the focus of this project measured these outcomes, implemented an education intervention, and measured improvements in meeting the targeted goals. The DNP student interfaced with the IPCP team caring for these patients with diabetes, using quality improvement techniques. The outcomes of this project are graphically displayed on a run chart with plotted data over time, and include the observed baseline data, and the pre and post diabetes educational intervention results. Barriers were also identified to determine why documentation of the provision of P-DSME was not completed by members of the IPCP team, thereby initiating the testing of solutions on two small scale PDSA cycles. The goal of increasing the frequency documentation of P-DSME was achieved after two PDSA cycles. In Chapter 5, the interpretation of results is discussed.
Chapter 5: Interpretation of Results

Discussion

Chapter 5 presents a discussion of the findings and conclusions. The objective of this DNP quality improvement project was to educate healthcare providers on Diabetes Self-Management Education to ensure effective, competent, care. The desired outcome was the healthcare providers’ application of new DSME knowledge and was measured by an increase in the rate of patients with DSME documentation on the flow sheet. The Institute for HealthCare Improvements (IHI) Model for Improvement design has been used to successfully accelerate process improvement work in numerous health care organizations (Langley et. al., 2009). The plan, do, study, act (PDSA) cycles are small tests of change conducted in the “real-world” setting (Langley et. al., 2009). The components of the PDSA were discussed in Chapter 3. There were two PDSA cycles conducted after determining there was no documentation of P-DSME during the baseline data collection, and the education intervention was implemented to improve the care of patients with poorly controlled Type 2 diabetes. Post intervention, the outcomes of the process improvement measure were evaluated, data plotted and presented on a run chart visibly displayed an increase in the documentation of provision of patient diabetes self-management education on the diabetes flow sheet.

Interpretation of Results

The run chart used for this DNP project graphically displayed data plotted over time and yielded data to make conclusions and detect process improvement. To establish a baseline, at least 12 or more data points add a horizontal line representing the median that shows half the data points are above and half are below (Anho, 2015; Perla, Provost & Murray, 2011). As discussed in Chapter 3, the same operational definition was used to define data points on run
charts throughout the project. The target population, also discussed in previous chapters are patients 18 to 81 years of age with a diagnosis of type 2 diabetes (T2DM) and a HbgA1C level 8% or greater. The baseline/pre-intervention diabetes self-management documentation rate for patients with T2DM was zero, indicating no provision of patient Diabetes Self-Management Education (P-DSME) on the flow sheet. Outcome measurements obtained through weekly chart reviews post intervention were done by DNP student. Weekly chart reviews were performed for ten weeks post intervention and showed positive trends. As stated in Chapter 4, two out of those ten weeks there were no P-DSME documentation and PDSA cycles were conducted. There were some unforeseen circumstances and staff performance issues as mentioned in Chapter 4 that led to no documentation, zero rate. The run chart showed improved documentation post PDSA cycle 1; July 24 through July 31, 2017; return to no documentation, August 7, 2017 and improved documentation post PDSA cycle 2 chart review (See Appendix F). The y-axis displayed rate of documentation per charts. The rate was 5 per 10 charts the week of August 21 to August 28, 2017 of patients with type 2 diabetes (T2DM) charts had DSME documentation on the flow sheet. The following week, September 4, 2017, retrospective chart review revealed an increased rate to 10 charts in P-DSME documentation of the flow sheet by the Interprofessional Collaborative Practice (IPCP) team members.

**Limitations**

The quality improvement pilot project had a few limitations. The convenience sample of Interprofessional Collaborative Practice team members at the neighborhood health center was the target population for diabetes education by the DNP student. A larger sample that was more representative of interprofessional health care providers from more than one of the Cincinnati
health care centers would be have beneficial as a population health approach to diabetes care measures such as educational documentation.

Barriers and limitations of the IPCP team were providers did not consistently document DSME at the point of care on the diabetes flow sheet at the neighborhood health center even though they found it time saving. Access of the current diabetes flow sheet on the patient chart took some time if it was not previously uploaded in the chart at the point of care in real time, therefore documentation was done in other sessions of the chart.

**Recommendations for Continuation of Project**

**Within Organization Strategic Plan**

The CHD administrators have identified training in Diabetes Self-Management Program for healthcare providers as a goal in its strategic plan. In this project, all of the Interprofessional Collaborative Practice (IPCP) team members participated in the DSME education which included documentation on the diabetes flow sheet. The specific focus of this project was to improve practice through IPCP education on the existing standards for diabetes self-management education of patients with type 2 diabetes, and the documentation on the DSME flow sheet. This intervention was welcomed by the healthcare providers. Also, the consistent use of the diabetes flow sheet provided staff with a snapshot synopsis of patient’s profile in one area. The IPCP team members diabetes found this to be time-saving, and shared information with other team members about its efficacy. For example, the staff can get a first-hand glance on a single summarized page of documentation about how the patient has been doing as far as recent labs, vital signs, A1C, weight, foot and eye exams and diabetes education. The IPCP team members’ buy-in for this project was significant, and Cincinnati Health Department administrators plan
to implement the project in other health centers to diabetes patients with poorly controlled hemoglobin A1C.

**Interprofessional Collaborative Practice**

Particularly important in this project was the interprofessional approach to care. For example, the pharmacist’s role at the Millvale Health Center is beyond the traditional role of dispensing medications. The social worker took the social determinants socioeconomics issues on the diabetes education flowsheet, giving her responsibility for additional documentation. Multiple disciplines are now working together with patients to promote change in their behavior. This is a key tenet of quality diabetes education in the delivery of care.

**Healthcare Organization Leadership**

Given the documented effectiveness of diabetes self-management interventions nationally, the Cincinnati Health Department (CHD) organization is supportive of a program that may positively improve the quality of patient care, reduce costs and improve patient satisfaction while producing the greatest benefit for their patients. The CHD plans to continue the project, and spread it to their other health centers. The CHD administrators were consistently very supportive of the DNP quality improvement project, as it is in alignment with its mission and values. Meetings with the CHD administrators informed this student of the benefits of the incorporation of diabetes self-management education strategies in the delivery of care. The importance of the patient’s competence in self-management of diabetes care, and of the care provider’s role in partnering with the patient and their families to ensure self-management competence is critical to deliver the content and provide the support to manage diabetes successfully. As mentioned in Chapter 3, the Millvale Health Center was targeted by the CHD for this project because of the high number of patients (158) with diabetes A1C of 8% and
greater. The CHD leadership recognized the critical need to address this population health issue and disparity.

**Implications for Practice**

The Patient-Centered Medical Home (PCMH) model of care delivery ensures high quality, cost-effective, and patient-centered care and should be at the center of healthcare (Lipson, Rich, Libersky, & Parchman, 2011). The Millvale Health Center is a federally qualified health center and is a patient-centered clinic. Through a patient-centered approach, an interprofessional team provides comprehensive care across the continuum of life, and manages chronic diseases such as diabetes by providing patients with preventive health education (Summary of PCMH Laws, 2013).

The Millvale Health Center is a patient-centered clinic and incorporation of diabetes self-management education strategies will benefit the patient with diabetes. A nurse’s role in the promotion of health involves proper knowledge of diseases and their treatment, but also awareness of the social determinants influencing health to care for patients holistically. The nurse can also use evidence-based practice standards to prevent diabetes-related complications. Improving relationships and effective communications between the healthcare providers and patients can positively impact health outcomes, improve patient and staff satisfaction, and lower cost.

**Future Research**

Studies have shown that Registered Nurse (RN)-led DSME is associated with improved health outcomes and glycemic control (Tshiananga et al. 2011). Additional research studies are needed to determine the effectiveness of DSME interventions in adult populations, both younger than 65-year-old or older than 65-year-old individuals in the community, home or acute settings.
Research is also needed to determine what settings are optimal for DSME, what duration of time is most effective for teaching patients self-care, if one-one or group DSME programs are more effective, and what ethnic groups need tailored diabetes education programs. These are questions that need future examination through quality improvement projects and research, and their findings reported in the literature.

**Future Implications**

Addressing the increasing epidemic of diabetes in the Millvale area, the CHD administrators have made plans to incorporate and spread DSME strategies in the delivery of care to patients with diabetes. The CHD administrators have recognized the importance of DSME with healthcare providers and have asked this DNP student to participate in their efforts to spread this project’s intervention to other CHD health centers.

The patient-centered medical home model ‘represents an innovative framework to care in which an interprofessional team provides comprehensive care is pivotal in improving outcomes in patients with at-risk, poor control patient with diabetes. The interprofessional approach save lives and reduces short and long-term adverse outcomes (Grave et al., 2010). Medicare services offered for diabetes includes Diabetes Self-Management Education programs to teach patients with diabetes how to better manage their condition (“Medicare coverage” n.d.).

**Population Health Implications**

Diabetes as a chronic disease is a significant driver of healthcare cost, and particularly relevant to population health. The DNP’s project’s goal was to educate healthcare providers to improve their ability and commitment to teaching diabetes patients to manage their condition. Education is an effective way to pursue the IHI’s Triple Aims to improve the individual experience of care, reduce the cost of care and improve health outcomes. This requires that the
population served become better informed about both their physical health status and the behaviors needed to self-manage their health care.

In this project, the CHD administrators have identified gaps in diabetes self-management education provision and documentation, and the need to address this population health issue (N. Bertschy, personal communication, August 29, 2016, City of Cincinnati Health Department 2016a). The population health management approach for the health concerns for this population of patients with diabetes, which the CHD has taken are:

- Identify, track and intervene with patients poorly controlled with diabetes,
- Proactively reach out to this targeted population of patients with diabetes during and follow-up clinic visits.
- Use the CHD organization’s neighborhood Millvale Health Center, as an example of a patient-centered medical home and patient-centered model delivery care, that are aligned with the CHD’s mission and values to empower patients with diabetes about self-management and making health decisions to manage their disease.

High-risk patients with T2DM have been targeted for the improved provision of DSME in the neighborhood Millvale Health Center. Approximately 158 patients with diabetes have A1C of 8% and higher were identified by the Cincinnati Health Department Millvale health center nurse administrator in the past year. The concern was that these patients lacked sufficient knowledge of diabetes self-management which may contribute to long-term and diabetes-related complications and even death. The problem addressed in this project was the lack of DSME currently provided by the IPCP team. The IPCP team was educated by this DNP student on
DSME and the importance of patients with diabetes receiving diabetes self-management education at the point of care.

**Conclusions**

This quality improvement project was designed to educate interprofessional collaborative practice (IPCP) team members on Diabetes Self-Management Education to improve the provision and documentation of education at the Millvale Health Center. Diabetes is a major health concern and has an increasing prevalence in the United States and Millvale. The role of the IPCP team for this project is essential in educating and engaging patients with Type 2 diabetes in self-care. The DNP program prepares nurses to lead in an interprofessional environment. Application to DNP roles includes patient advocates, clinical providers, educators and change agents.

An interprofessional approach among healthcare providers has been reported to improve patients’ disease management, and quality of life, and reduces hospitalizations (Powers et al., 2015). Patients diagnosed with diabetes may lack proper knowledge to manage their disease effectively. This lack of knowledge may also increase the risk of developing the complications of diabetes. Diabetes self-management education is a crucial element of care for patients with diabetes in order to delay or prevent complications of the disease (Hass et al., 2012).

The needs assessment prior to implantation of this project revealed that diabetes self-management education was not sufficiently provided, and the current diabetes education flow sheet was not used by care providers. The Institute for Healthcare Improvement (IHI) Model for Improvement Plan-Do-Study-Act (PDSA) cycle method was the quality improvement design used for this project (Langley, 2009; Institute for Healthcare Improvement [IHI], 2017). The Model for Improvement design has been used to successfully accelerate process improvement
work by numerous healthcare organizations (Langley et al., 2009; IHI, 2017). PDSA cycles are small tests of change, conducted in a “real world” setting (Langley, 2009).

The run chart used for this DNP project graphically displayed data plotted over time and yielded data to make conclusions and detect process improvement. Overall, the run chart showed a non-random pattern/signal of change post intervention and after two PDSA cycles. The outcomes of the process improvement measure were evaluated, and the data plotted on a run chart visibly displayed an increase in the documentation of provision of patient diabetes self-management education on the diabetes flow sheet. The set goal for provider documentation for this DNP project increase rate of 100% (10 per 10 charts) was achieved by the IPCP team members.
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Appendix A

American Association of Diabetes Educators 7 Self-Care Behaviors

AADE7 self-care behaviors essential for successful and effective diabetes self-management are:

- Healthy Eating
- Being Active
- Monitoring
- Taking Medications
- Problem Solving
- Healthy Coping
- Reducing Risks.

With the DSME, the seven areas listed above are all considered priority areas and will be evaluated for each patient in terms of importance for their current health condition. For instance, if the patient is taking their medications correctly, then this may not be a priority issue for a clinic appointment.

Source: (American Association of Diabetes Educators, 2010).
Appendix A Extension

If you've just learned that you have diabetes or prediabetes, you probably have a lot of questions about what you can or can't eat. Do you wonder if you can ever have your favorite food again? What happens when you are eating at a restaurant or a friend's house? Do you have to change your whole diet just because you have diabetes?

The answer is NO. There is nothing that you can't eat. You don't have to give up your favorite foods or stop eating at restaurants. But, it is important to know that everything you eat has an effect on your blood sugar. Learning to eat regular meals, controlling the amount you eat, and making healthy food choices can help you manage your diabetes better and prevent other health problems.

Some skills are more complex, but your diabetes educator or dietitian can help you learn about:

- Counting carbohydrates
- Reading food labels
- Measuring the amount of a serving
- Developing a practical meal plan
- Preventing high or low blood sugar
- Setting goals for healthy eating

Pick one or two of these skills and discuss them with your healthcare provider.

**DID YOU KNOW?**
There are only 3 main types of nutrients in food: carbohydrates, proteins, and fats. A healthy meal will include all three types.

**TRUE OR FALSE:**
People with diabetes can't have sugar.

**FALSE:** Sugar is just another carbohydrate and can fit into a meal plan. Sugary foods, however, do not have the same nutrition as grains or vegetables, and can often be high in fat and calories. It's best to limit sugar-containing foods to small portions, and be sure to count the carbohydrates toward the total recommended in your meal plan.

**Word Wall**

CARBOHYDRATE (AKA "CARBS"): One of the three main types of nutrients found in food. Bread, pasta, rice, fruits, vegetables (especially starchy vegetables such as potatoes, corn, peas, dried beans), milk, and sweets are all carbs. Don't forget that carbohydrates can be found in beverages, too.

PORTION: How much of a food you eat

MEAL PLAN: A guide for healthy eating developed with your healthcare provider

HYPOGLYCEMIA: Low blood sugar

HYPERGLYCEMIA: High blood sugar

**Quick Tips**
Eat breakfast every day. Breakfast helps begin the calorie-burning process that provides you with energy. Include small snacks between meals as part of your daily intake to help keep your body going.

Space your meals throughout the day. Going too long without eating may result in excessive hunger, which can lead to overeating later on. Try to eat every 4 to 5 hours during waking hours.

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BEING ACTIVE

Being active is not just about losing weight. It has many health benefits like lowering cholesterol, improving blood pressure, lowering stress and anxiety, and improving your mood. If you have diabetes, physical activity can also help keep your blood sugar levels closer to normal and help you keep your diabetes in control.

It can be difficult to find the time or the motivation to start an exercise program. Everyone’s physical abilities and schedules are different, choose the best ways to fit physical activity into your daily life—whether it’s walking to work, doing chair exercises or working out at the gym.

The important thing to remember is to choose activities that you enjoy doing and to set goals that are realistic.

Your healthcare provider can help you design an activity plan that works for you.

DID YOU KNOW?

Breaking activity into three 10 minute sessions throughout the day is just as good as one 30 minute session. This can help you fit exercise into your schedule.

TRUE OR FALSE?

You are not working out hard enough if you can carry on a conversation.

FALSE. You should be able to talk when doing an activity. If you can’t, then your body is working too hard and you need to slow your pace.

Word Wall

EXERCISE (OR PHYSICAL ACTIVITY):
Activities that get your body moving and help you stay healthy

CARDIO:
Exercise that raises your heart rate

RESISTANCE TRAINING:
Activities that help you build muscle and strength

Quick Tips

Any amount of physical activity is better than none at all. Making physical activity part of your daily lifestyle burns calories even if it’s not part of a structured plan.

Even if you are inactive and out of shape now, you can improve your health by moving just a little more. Take small steps to add more movement into your daily lifestyle. In time, you will find that you are stronger and will be able to move even more!

Check your glucose before and after physical activity to learn how your body responds.

Supported by an educational grant from Eli Lilly and Company.
ACTIVITIES

ASK YOURSELF

What’s your all time favorite activity that gets you moving?

What stops you from doing it? (Circle as many as you want)

» Not enough time
» Too out of shape
» Too tired
» Not motivated
» Can’t afford it
» My __________________ hurts too much

What can you do to get started doing this activity or working up to it?

Pick some other activities that you enjoy doing:

MAKE A FITT PLAN FOR YOUR PHYSICAL ACTIVITY:

» Frequency—How often will you do this activity? Work up to 5 or more days a week.
» Intensity—How hard should you be working? Remember, you should be able to talk, but not sing during an activity.
» Time—How long will you do it? Be realistic. Start with 5 or 10 minutes, and work up to 30 minutes.
» Type of Activity—What will you be doing? Do something you enjoy!

GET CREATIVE!

» Partner with a friend to find creative ways to be more physically active.
» Take your dog for a walk or play fetch at the park.
» Call a friend to go dancing or put on your favorite song and make the living room your personal dance floor.
» Find a gym buddy to motivate you to stay active.
» Take the stairs instead of the elevator.
» If you eat lunch with a co-worker, ask him/her to join you for a short walk after you eat.
Checking your blood sugar levels regularly gives you vital information about your diabetes control. Monitoring helps you know when your blood sugar levels are on target. It helps you make food and activity adjustments so that your body can perform at its best. It takes some time and experience to figure out how your daily activities and actions affect your blood sugar.

Your diabetes educator can help you learn:
- How to use a blood sugar (glucose) meter.
- When to check your blood sugar and what the numbers mean.
- What to do when your numbers are out of your target range.
- How to record your blood sugar results.

Checking your blood sugar is an important part of diabetes self-care, but monitoring your overall health includes a lot of other things too, especially when you have diabetes. You and your healthcare team will also need to monitor your:
- Long-term blood sugar control—A1C, eAG
- Cardiovascular health—blood pressure, weight, cholesterol levels
- Kidney health—urine and blood testing
- Eye health—dilated eye exams
- Foot health—foot exams and sensory testing

DID YOU KNOW?
The American Diabetes Association recommends an A1C target below 7% (an eAG of 154 mg/dl); the American Association of Clinical Endocrinologists recommends less than 6.5% (an eAG of 140 mg/dl).

TRUE OR FALSE?
If you want to see how your body responds to your meal, wait 1-2 hours after eating to check your blood sugar levels.

TRUE: Your blood sugar rises in response to what you’ve eaten. It takes about 2 hours for the numbers to reflect the full rise.
Remember, the way you feel does not always reflect what your blood sugar is doing. The only way you know is to check your numbers!

- Check your blood sugar levels as directed to share with your doctor or diabetes educator.
- Follow a schedule, keep a record of your daily levels, and use the numbers to make decisions about your diabetes care.
- Check your blood sugar levels if you think you're getting sick.

When you check your blood sugar levels:

- Keep a record and bring it to every health appointment.
- Try to identify patterns when your blood sugar goes up or down.

If your numbers aren't at goal, don't get down. This is useful information that can help your healthcare provider match your treatment to your needs.

If you develop a regular schedule and follow it closely, you'll learn how your blood sugar levels affect how you feel. You'll start to recognize unhealthy blood sugar trends before they get out of control.

What is your typical day like, in terms of eating, activity, and diabetes medication? (Record it in the space below)

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Eating</th>
<th>Medication</th>
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<tbody>
<tr>
<td>6:00 a.m.</td>
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</table>
There are several types of medications that are often recommended for people with diabetes. Insulin, pills that lower your blood sugar, aspirin, blood pressure medication, cholesterol-lowering medication, or a number of others may work together to help you lower your blood sugar levels, reduce your risk of complications and help you feel better.

Your medications come with specific instructions for use—and they can affect your body differently depending on when and how you take them. It may take a while to figure out which medicines work best with your body. So it’s important for you to pay attention to how you feel and how your body reacts to each new medicine or treatment. It’s up to you to tell your pharmacist, doctor, nurse practitioner, or diabetes educator if you’ve noticed any side effects.

It’s important to know the names, doses and instructions for the medications you’re taking, as well as the reasons they are recommended for you.

REMEMBER TO:

> Ask your doctor, nurse practitioner or pharmacist why this medication was recommended for you.

> Ask your diabetes educator to help you fit your medication routine into your daily schedule. Be sure to bring all medications or labels with you when you go to health appointments.

> Ask a family member to go with you to an appointment and take notes about any medication instructions. Or, ask someone to remind you to take your medications if you have difficulty remembering to take them.

DID YOU KNOW?

Some over-the-counter products, supplements, or natural remedies can interfere with the effectiveness of your prescribed medicines. Tell your diabetes educator about ANY supplements you are taking so that he/she can make the best recommendations for your care.

TRUE OR FALSE?

When you inject insulin, you need to rotate your injection sites.

TRUE. If you inject insulin in the same spot every time, your tissue can become damaged and won’t absorb insulin as well. Be sure to rotate your injection sites between the fatter parts of your upper arm, outer thighs, buttocks, or abdomen.

Word Wall

INSULIN: A hormone that helps the body use glucose (sugar) for energy

SIDE EFFECT: An effect that a drug has on your body that it is not intended (i.e. diarrhea, nausea, headache)

Quick Tips

If you often forget to take your medication, try to remind yourself by linking it to a specific activity—like watching the news every night or brushing your teeth—or by setting an alarm on your watch or cell phone.

Take a pen and some paper with you to your healthcare visit and take notes when your provider tells you about your medicine.

Supported by an educational grant from Eli Lilly and Company.
ACTIVITIES

How do you feel about having to take insulin or other medicines?

What is the hardest part about taking your medications?

Name one of your medications.

How much are you supposed to take?

When are you supposed to take it and how often?

Why do you have to take this medication?

What are some of the possible side effects?

What are you supposed to do if you experience side effects?

Anything else you need to know?

What do you do if you forget to take this medication?

*Repeat this exercise for every medication. Be sure to ask your pharmacist or diabetes educator if you do not know the answers.
AADE7™ SELF-CARE BEHAVIORS

PROBLEM SOLVING

What do you do when you have a problem like low blood sugar [hypoglycemia]? Do you know what caused it? How can you help reduce the risk of it happening in the future?

Everyone encounters problems with their diabetes control; you can't plan for every situation you may face. However, there are some problem-solving skills that can help you prepare for the unexpected—and make a plan for dealing with similar problems in the future.

Some of the most important problem-solving skills for diabetes self-care are learning how to recognize and react to high and low blood sugar levels and learning how to manage on days when you are sick.

Your diabetes educator can help you develop the skills to identify situations that could upset your diabetes control.

DID YOU KNOW?

Skipping meals and snacks, taking too much diabetes medication, engaging in physical activity and drinking too much alcohol can all cause you to experience low blood sugar problems.

TRUE OR FALSE?

Nobody has perfect diabetes management.

TRUE. You are not perfect—no one is. There WILL be problems and challenges. The important thing is to learn from each situation—what caused your blood sugar to go above or below target, and what you can do to improve your diabetes self-care.

Word Wall

HYPOGLYCEMIA:
Low blood sugar

HYPERGLYCEMIA:
High blood sugar

GOAL SETTING:
Choosing a specific task or activity that you want to achieve and making a plan to get there

Exercise warning:
Go to farmer's market
Pick up prescriptions

QUICK TIPS

Do not go more than 5 hours without eating during your waking hours.

Limit your alcohol consumption. Learn how it interacts with your medications and how it affects your blood sugar.

When you do drink alcoholic beverages, don't drink on an empty stomach.

If you do have a problem with your diabetes control, don't beat yourself up over it—solve it and learn from it! Talk to your healthcare provider—they can help you come up with solutions.

Supported by an educational grant from Eli Lilly and Company.
ACTIVITIES

WHAT WOULD YOU DO?
Think about how the following situations may affect you—and about what steps you could take to maintain proper control of your diabetes in similar situations.

You get the flu and notice that your blood sugar levels are higher than normal. What do you do?

While on vacation, you don’t have easy access to a gym or time for exercise. How will you handle this?

You have a hard time finding healthy food choices within your family’s cultural or taste preferences. What steps can you take?

Is there something you’ve been struggling with in your diabetes care? What is it?

Why do you think this is a problem? When does it occur?

Name two things you can do to fix it.

What can you do to prevent it from happening in the future?
AADE7™ SELF-CARE BEHAVIORS

HEALTHY COPING

Did You Know?

Physical activity can influence your mood. If you are sad, anxious, stressed or upset, go for a walk, stand up and stretch, or take a bicycle ride. Exercise actually increases the chemicals in your brain that help make you feel good!

TRUE OR FALSE?

Nobody wants to hear about your problems. When you are feeling down, you should keep it to yourself.

FALSE: You need to talk about your emotions with friends, family, or your healthcare provider. Sometimes just talking about a problem will help you solve it, and loved ones can help you gain perspective.

QUICK TIPS

Recognize the power of positive thinking. When you are feeling down, think about your successes and feel good about the progress you’ve made toward a goal—even if it’s just a little bit. Find time to do something pleasurable every day.

Diabetes can affect you physically and emotionally. Living with it every day can make you feel discouraged, stressed or even depressed. It is natural to have mixed feelings about your diabetes management and experience highs and lows. The important thing is to recognize these emotions as normal. Take steps to reduce the negative impact they could have on your self-care.

The way you deal with your emotional lows is called "coping." There are lots of ways to cope with the ups and downs in your life—and not all of them are good for your health (smoking, overeating, not finding time for activity, or avoiding people and social situations).

However, there are healthy coping methods that you can use to get you through tough times (faith-based activities, exercise, meditation, enjoyable hobbies, joining a support group).

Having a support network is key to healthy coping. Be sure to develop and nurture partnerships in your personal life with your spouse, loved ones and friends. Go to group educational sessions where you can meet and relate to other people going through the same experiences. Build healthy relationships—and remember that you’re not alone.

Sometimes, emotional lows can be lengthy and have a more serious impact on your life, health, and relationships. This can be a sign of depression. Tell your diabetes educator if you:

› Don’t have interest or find pleasure in your activities.
› Avoid discussing your diabetes with family and friends.
› Sleep most of the day.
› Don’t see the benefit in taking care of yourself.
› Feel like diabetes is conquering you.
› Feel like you can’t take care of yourself.

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ACTIVITIES

Name 3 emotions that you feel when you think about your diabetes.

Who can you talk to when you feel this way?

Name 3 activities that will help you work through this emotion and feel better.

What might prevent you from doing these activities?

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

How can you overcome these obstacles?

____________________________________________________________________

____________________________________________________________________
Having diabetes puts you at a higher risk for developing other health problems. However, if you understand the risks, you can take steps now to lower your chance of diabetes-related complications.

Talk to your diabetes educator and healthcare provider about potential health issues such as kidney damage, nerve damage and vision loss. They can explain why complications happen and how they can be avoided.

But don’t rely on your healthcare team to identify areas of concern—you need to play an active role in reducing your risk. Make an effort to learn about complications and consistently track your overall health. You can reduce your risks for several complications by taking these precautions:

- Don’t smoke.
- Schedule regular medical checkups and medical tests.
- See an ophthalmologist (eye doctor) at least once a year.
- Keep your feet dry and clean. Look out for redness or sores, and report these to your healthcare team as soon as you find them. If you have trouble seeing the bottom of your feet, ask a family member or friend to help you.
- Be sensitive to your body—recognize when you aren’t feeling well, and contact your care team if you need help identifying the problem.

**DID YOU KNOW?**

Lowering your cholesterol can decrease your risk for stroke, heart attack, or other circulation problems.

**TRUE OR FALSE?**

Controlling your diabetes can help reduce your risk for heart disease.

**TRUE.** If your blood sugar or blood pressure levels are too high for too long, your blood vessels can become sticky. This makes it easier for blood clots to form—which can lead to a heart attack or stroke.

**BLOOD PRESSURE:**

The amount of pressure that is applied to your arteries when blood is pumped through your body.

**CHOLESTEROL:**

A waxy substance that is in your blood that exists in two types: LDL ("bad") and HDL ("good").

**COMPLICATION:**

Another health problem that can happen when you have diabetes.

**HYPERTENSION:**

When your blood pressure is higher than 140/90.

**QUICK TIPS**

Keep a Personal Care Record or a wallet card that lists all of the tests you should be regularly getting and the targets for each.

Sleep apnea affects more than half of people with diabetes and most don’t know it. If you snore loudly or feel sluggish and tired during the day, ask your diabetes educator to screen you for sleep apnea.

Supported by an educational grant from Eli Lilly and Company.
ACTIVITIES

These are some of the things you can do to stay healthy and prevent other problems.

- **Follow your healthy eating plan.**
  Are you proud of the way you ate today?

- **Keep active.**
  What is your favorite outdoor activity?

- **Take medications.**
  Did you take your meds today?

- **Monitor your blood sugar.**
  What was your blood sugar number last time you checked?

- **Check your feet.**
  Any pain or sores on your feet?

- **Brush and floss your teeth.**
  When was your last dentist visit?

- **Check your blood pressure.**
  Do you know what your blood pressure is?

- **Don’t smoke.**
  What can help you quit?

- **Get an eye exam (which includes dilating your eyes) at least once a year.**
  Have you had an eye exam this year?

<table>
<thead>
<tr>
<th>RECOMMENDED TESTS</th>
<th>TARGET LEVELS</th>
<th>FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1C</td>
<td>Less than 7%</td>
<td>Every 3 to 6 months</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>&lt;140/90, lower targets may be appropriate in certain individuals*</td>
<td>Every visit</td>
</tr>
<tr>
<td>Lipids</td>
<td></td>
<td>At least every year</td>
</tr>
<tr>
<td>HDL (good cholesterol)</td>
<td>Over 40 (for men); Over 50 (for women)</td>
<td>Every visit to your healthcare provider</td>
</tr>
<tr>
<td>LDL (bad cholesterol)</td>
<td>Less than 100 (less than 70 if you have heart disease); Less than 150</td>
<td>Every year</td>
</tr>
<tr>
<td>Triglycerides</td>
<td></td>
<td>Every year</td>
</tr>
<tr>
<td>Eye Exam</td>
<td></td>
<td>Every year</td>
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<tr>
<td>Foot Exam (visual)</td>
<td></td>
<td>Every year</td>
</tr>
<tr>
<td>Foot Exam (with sensory testing)</td>
<td></td>
<td>Every year</td>
</tr>
</tbody>
</table>

* Younger individuals, people with albuminuria, and/or individuals with hypertension and one or more additional ASCVD risk factors.
Appendix B

Interprofessional Collaborative Practice Diabetes Self-Management Education
Sessions Content
Part 1- Initial IPCP Group Education Session

1. Introduction
   - Overview of Diabetes Self-Management Education Actions to be taken by patients with diabetes to gain skills and knowledge to manage their disease and related conditions successfully
   - Process incorporates IPCP members goals for DSME and flowsheet documentation, experiences and guided by evidence-based standards
   - Diabetes is a lifelong disease and requires self-management Engagement. Provide DSME based on person’s life, culture, and experiences
   - Solicit and response to questions.
     - Ask about living with diabetes
     - What is the most concern to you about diabetes?
     - How is diabetes affecting your life?
     - What can we do to help you?
     - What is one thing you are doing or can do to manage your diabetes better?
     - Discuss goal setting.

2. Use of the American Association of Diabetes Educators7 tool
3. How to use of the Diabetes Flowsheet and its importance

Part II- Menu to Draw on in Follow-Up Education of Individual IPCP Members

1. Highlight the IPCP team approach to diabetes care – Teaching-Learning Process

2. Risk factors for developing diabetes-related complications
   - Foot complications
   - Kidney Disease
   - High Blood Pressure
   - Stroke
3. Current guidelines for diabetes management
   a. Glucose control
   b. Blood pressure
   c. Lipid management
   d. Dietary management

Sources: American Association of Diabetes Education, 2010; Hass et al., 2012; Powers et al., 2015

*Throughout the teaching, some of the major teaching strategies will be effective communication with the patient, communicating empathy for the patient, providing practical advice, covering the
topics of highest interest to the patient, being clear and responding to patient questions and needs, involving the patient in decision-making, and ongoing support (Oftedal, Karlesen & Bru, 2010).
Appendix C

IRB

April 26, 2017

Adelaide Harris
c/o Susan Allen
Xavier University
ML7351
Dear Ms. Harris,

Thank you for your submission to the IRB. I appreciate your obvious efforts to provide our office with as much information as you could, particularly given that QI projects have not been submitted to us with great frequency. Having spent the past several days researching your project, similar projects, and the existing guidelines surrounding QI projects and IRB process, it is my determination that your study does not meet the definition of "research" that governs IRB functioning, and therefore does not require review by our office.

This determination is based on several factors related to the study design, the nature of the intervention, the type of data being utilized, and the ultimate goal of the project. Although you may (and hopefully will) ultimately publish work based on this project, it seems clear that the project is designed to provide immediate answers to an issue of concern to local agencies, rather than targeting the broad generalizable knowledge base. Based on that conclusion, our IRB cannot and should not assert oversight of your project, given that our charge is limited to reviewing and approving those projects that meet the definition of "research" prescribed in the Code of Federal Regulations (45CFR46.102 (d)).

We wish you every success with your project.

Sincerely,

Morell E. Mullins, Jr., Ph.D.
Chair, Institutional Review Board
Xavier University
May 22, 2017

Adelaide Harris MSN, Med, RN
Department of Nursing
Xavier University
3800 Victory Parkway
Cincinnati, OH 45207

Dear Ms. Harris,

I have reviewed your proposal entitled ‘Diabetes Self-Management Education Provision by an Interprofessional Collaborative Practice Team: A Quality Improvement Project’, Principal Investigator (PI): Adelaide Harris MSN, Med, RN, which was submitted as an exempt quality improvement project for expedited review on May 5, 2017. Your statement was that the project was exempt because of Exemption 45 CFR 46.101(b)(1) (which covers research in Educational Settings).

Based on my review, I have determined that your project does not meet the criteria to be classified as a research project, defined as a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge, per the definition of "research" prescribed in the Code of Federal Regulations (45CFR46.102(d)). This determination is based on several factors related to the project design, the nature of the intervention, and the goal of the project.

Your project is a quality improvement project designed to increase the provision of diabetic self-management education (DSME) to Millvale Health Center diabetic patients by Millvale Health Center care providers, through repeated PDSA cycles with periodic individual provider reinforcement of the need to provide DSME to patients, based on observed provider performance. The ultimate goal of the project is specific to improving provision of DSME in the Millvale Health Center, rather than the development of generalizable knowledge. Because the project does not qualify as a human subject research project, formal review and oversight is not required by the Cincinnati Health Department IRB.

If you have any questions concerning this determination, please feel free to contact me.

Sincerely,

[Signature]

Camille Jones, MD, MPH
Chair, Cincinnati Health Department Institutional Review Board
513-357-7271
Camille.jones@cincinnati-oh.gov
Appendix D

Diabetes Education Data Collection Sheet

<table>
<thead>
<tr>
<th>Patient Code</th>
<th>Date of Recent Visit</th>
<th>Care Provider Code</th>
<th>Age Range</th>
<th>Gender</th>
<th>Race</th>
<th>Document of Teaching Prior Visit Y/N</th>
<th>Document of Teaching Recent Visit Y/N</th>
<th>Education Topics Provided To Patients</th>
<th>Care Provider Re-Education</th>
<th>Barriers</th>
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Appendix E

Plan Do Study Act (PDSA) Form

PLAN DO STUDY ACT (PDSA) FORM

Cycle #: 1

Start Date: 7/17/17            End Date 7/21/17

Project Title: Diabetes Self-Management Education Provision
University/Organization Name: Xavier University

Decision Support: Documentation on Diabetes Flowsheet

Objectives of this Cycle:

✓ Test a Change

Implement a Change

Spread a Change

Short objective of cycle: Increase DSME documentation adherence from 0-100% on patients with diabetes with hemoglobin A1Cs more than 8% who present to the Millvale Health Center.

PLAN

Test/Implementation Plan: Documentation of Diabetes Self-Management Education (DSME) in Electronic Health Record (EHR) by Interprofessional Collaborative Practice (IPCP) team

What change will be tested or implemented? IPCP-DSME Documentation on Diabetes Flowsheet with each patient visit

(How will the change be tested or implementation be conducted consider small scale early)? Chart Review/One on one reminder of Patient DSME on flowsheet
Who will run the test or implementation? DNP student

Where will the test or implementation take place? Millvale Health Center

When will the test or implementation take place? After patient clinic visit

Predictions:
1. Patient DSME on flow sheet will increase after IPCP team member barriers identified
2. The American Association of Diabetes Educators (AADE) 7, is a tool to assist healthcare providers in providing key topics related to diabetes.
3. Educating IPCP team on DSME will increase provision of Patient-DSME
4. Plotting data over time and viewing the pattern on run chart, will furnish the evidence of performance

Identifying barriers to DSME is necessary to increase education of diabetes self-management education

Data:
Feedback from Healthcare providers.

Barriers identified: IPCP member, Social Worker (SW), requested additional education on DSME documentation on the flowsheet and accessing the flowsheet in EPIC. Registered nurse (RN) reported time constraints.

The pharmacist barriers identified was: not trained to access diabetes education flowsheet in EPIC.

Data Collection Plan: Retrospective chart review

What information is important to collect? Documentation of DSME on flowsheet. Date of clinic visit, age range, gender, and race
Why is it important? Provides statistical and demographic data

Who will collect the data? DNP student

Who will analyze the data prior to Study? DNP student

Where will data be collected? Millvale Health Clinic

When will the collection of data take place? April 2017 to September 2017

How will the data (measures or observations) be collected? Patient diabetes self-management education documentation by IPCP team members from retrospect chart review.

**DO**

Observations: Documentation Patient DSME on flowsheet

What happened? One-on one meeting with providers identified barriers and solutions

What worked to change providers’ behavior? DNP meeting with providers- reeducated on

  where to access flowsheet in EPIC, reminder of the efficiency documentation and use of
  synopsis information. (For example, reminded flowsheet provided a first glance summary
  of patient profile, last A1C, last foot and eye exam, vital signs, and psychosocial needs all
  in one area).

Did you need to tweak the original Plan? No

Begin analysis of data (graph of the data, picture): Run Chart

**STUDY**

Questions: Copy and paste Questions and Predictions from Plan above and evaluate learning.

Complete analysis of the data. Insert graphic analysis whenever possible.

1. Prediction:
Yes, Patient DSME documentation on flow sheet increase after IPCP team member barriers identified

2. Prediction:
Yes, the American Association of Diabetes Educators (AADE) 7, a tool assisted healthcare providers in providing key topics related to diabetes, (tailored providing individuated education to promote change in behavior and life style.

3. Prediction:
Yes, educating IPCP team on DSME increased provision of Patient-DSME

4. Prediction:
Yes, plotting data over time and displaying the pattern on run chart, furnished the evidence of performance

5. Prediction:
Yes, identifying barriers to DSME is necessary to increase education of diabetes self-care management. One-on-one meeting with IPCP team members provided feedback, education on accessing and proper documentation on flowsheet. Listening to what providers’ had to say when asked why they did not document on the flowsheet was helpful to find what worked to change providers’ behavior.

Summary (Look at your data. Did the change lead to improvement? Why or why not?):
Education on IPCP on patient DSME and plotting the data over time (baseline, pre and post intervention) displayed on the run chart revealed increased the rate from 0 to 100% of DSME on the flowsheet.
ACT

Providing one-one feedback and re-education of P-DSME with the IPCP team members made changes in getting the desired measure (increasing documentation) in the

Describe next PDSA Cycle: Based on the learning in “Study,” what is your next test?

The act phase began after weekly chart review. The second PDSA cycle was conducted after a zero documentation on the run was obtained. The DNP student spoke directly with the IPCP team members in person, identified barriers, identified what worked to change the providers’ behavior and reinforced their visible improvement in providing and documenting P-DSME.

Some barriers identified again, were, time constraints, not prioritizing self-behaviors from the AADE tool, forgetting to document on the flowsheet. Retrospective chart review two weeks the post the first PDSA cycle revealed an increased rate of 0.7 (seven rate) on the run chart.

The second PDSA cycle moved the quality measure in the desired direction, an increase in P-DSME documentation on the diabetes flowsheet.

PDSA Cycle # 2

Decision support: Use of the American Association of Diabetes Educators (AADE) 7, a tool assisting healthcare providers in providing key topics related to diabetes, (tailored, providing individualized education) to promote change in behavior and life style. With the DSME, the seven areas are all considered priority areas and will be evaluated for each patient in terms of importance for their current health condition. For instance, if the patient is taking their medications correctly, then this may not be a priority issue for a clinic appointment. Barrier
identified from one on one interview with IPCP team members. For example, RN reported time constraints discussion on all topics of AADE7 each visit.

**Objectives of this Cycle:**

- Test a Change
- Implement a Change
- Spread a Change

**Start date: 8/7/17**

**End date: 8/14/17**

**Purpose of Cycle:** Educate IPCP providers on use of AADE 7 tool and benefits of best practice of DSME documentation designed to improved quality of care in clinical practice and save time.

**PLAN**

Test/Implementation Plan: Documentation of Diabetes Self-Management Education (DSME) in Electronic Health Record, reeducation of AADE 7 tool by Interprofessional Collaborative Practice (IPCP) team.

**What change will be tested?** Use of the diabetes flow sheet

**Who change been tested on?** APRN, RN, SW, & PharmD

**When testing occur?** 8/7/17 to 8/14/17

**Where testing occur?** Millvale Health Center

**Prediction:**

What is expected to happen? Patient diabetes self-management education will be easy to document on flow sheet, save time and increase rate/rate

**Data:**

**What data will need to be collected?** Patient diabetes self-management education.

Feedback/ barriers from healthcare providers
**Who will collect the data?** Doctor of Nursing Practice (DNP) student

**Where will the data be collected?** Cincinnati Health Department 2nd. floor Administrator office

**DO**

**What was actually tested?** Provision of Interprofessional Collaborative Practice (IPCP) team members’ documentation and trends in rates of P-DSME documentation of patients with type 2 diabetes

**What happened?** Interprofessional Collaborative Practice (IPCP) team became proficient in using the AADE tool and the diabetes flow sheet

**Observations?** Advanced practice registered nurse (APRN), Registered nurse (RN) Pharmacist, chart review of completed P-DSME documentation and value trend on run chart

**STUDY Analysis of Data. Summary of what was learned, compare data with predictions**

Findings on run chart displayed change in providers’ behavior changed in the desired direction. Trend in rates of the provision of P-DSME documentation observations increased in three weeks after second PDSA cycle. Pre and post P-DSME provision intervention is displayed shown on the run chart, see Appendix F. One provider stated the diabetes synopsis decreased time constrained in the documentation on the flowsheet and contributed to the efficiency documentation in one area in the electronic health record. The format of the flowsheet (which included AADE7 self-care behaviors to consider priority areas to be evaluated for each patient) provides quick access to patient profile and
information. Assessment parameters are organized to save healthcare providers time. Particularly important, the IPCP team members determined how the ease of the flowsheet optimized visit length. The collaborative approach to documentation was helpful and a great way to communicate across discipline. Subsequent teaching strategies and content incorporated the needs of the patient to empower the IPCP team members to educate patients to improve their ability to manage their illness.

Source: http://www.ihi.org/resources/Pages/Tools/PlanDoStudyActWorksheet.aspx
## Table 1

### Database/Keywords

<table>
<thead>
<tr>
<th>Database Results/Keywords</th>
<th>CINAHL</th>
<th>MEDLINE</th>
<th>PubMED</th>
<th>ERIC</th>
<th>Cochrane Library</th>
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<tbody>
<tr>
<td>Diabetes Self-Management Education</td>
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<td>3 RCT’s</td>
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<tr>
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<td>140</td>
<td>36</td>
<td>61 RCT’s</td>
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<tr>
<td>Patient-Centered Medical Homes</td>
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<td>19</td>
<td>160</td>
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<td>9</td>
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<tr>
<td>Low income</td>
<td>78</td>
<td>30</td>
<td>59</td>
<td>42</td>
<td>3 RCT’s</td>
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Table 2
Strength Rating System for the Hierarchy of Evidence/Levels of Evidence

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Evidence for a systematic review or meta-analysis of all relevant RCTs or evidence based clinical practice guidelines based on systematic reviews of RCTs.</td>
</tr>
<tr>
<td>Level II</td>
<td>Evidence obtained from at least one well-designed RCT</td>
</tr>
<tr>
<td>Level III</td>
<td>Evidence obtained from one well-designed controlled trials without Randomization</td>
</tr>
<tr>
<td>Level IV</td>
<td>Evidence from well-designed case-control and cohort studies</td>
</tr>
<tr>
<td>Level V</td>
<td>Evidence from systematic reviews of descriptive or qualitative study</td>
</tr>
<tr>
<td>Level V1</td>
<td>Evidence from single descriptive or qualitative study.</td>
</tr>
<tr>
<td>Level V11</td>
<td>Evidence from the opinion of authorities and/or reports of expert committees</td>
</tr>
</tbody>
</table>

Grades of Recommendations

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Directly based on Level 1 evidence</td>
</tr>
<tr>
<td>B</td>
<td>Directly based on Level II evidence or extrapolated recommendations from Level I evidence</td>
</tr>
<tr>
<td>C</td>
<td>Directly based on Level III evidence or extrapolated recommendations from Level I or II evidence</td>
</tr>
<tr>
<td>D</td>
<td>Directly based on Level IV evidence or extrapolated recommendations from Level I, II, or III evidence</td>
</tr>
</tbody>
</table>

Sources: Melnyk & Fineout-Overholt, 2010; Polit & Beck, 2012