

12-2017

Interventions to Increase Diabetes Self-Management Education Referral and Attendance

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INTERVENTIONS TO INCREASE DIABETES SELF-MANAGEMENT EDUCATION
REFERRAL AND ATTENDANCE

by

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Genevieve A. Talamantez

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Abstract

Despite the proven benefits of diabetes self-management education, referral and attendance remains suboptimal. Diabetes self-management education has the ability to encourage self-care behavior, improve clinical outcomes, and improve quality of life in a cost-effective manner. The American Diabetes Association recommends that all people with diabetes receive education in order to facilitate the knowledge, skills, and ability necessary for diabetic self-care. The Office of Disease Prevention and Health Promotion, Healthy People 2020, set a national diabetic patient education attendance target goal of 62.5% for adults. The purpose of this quality improvement project is to increase referral and attendance to diabetes self-management education in type 2 diabetic patients. Interventions included: electronic medical record modifications, educating staff on the American Diabetes Association recommendations/Healthy People 2020 target goals, providing information material about diabetes self-management education to patients, and scheduling education appointments. The project was conducted at a Northwest San Antonio family practice clinic where the baseline diabetes self-management education referral rate was 5.8% and the baseline diabetes self-management education attendance rate was 1.5%. Two-hundred eligible patient electronic medical records were retrospectively reviewed in order to determine referral and attendance rates pre-/post-intervention. Interventions took place between June 1 to July 31, 2017. Post-intervention, the average referral rate increased to 31% and the average attendance rate increased to 11%. An independent sample t-test found that interventions were statistically significant for referrals; but not statistically significant for attendance.

Keywords: type 2 diabetes, diabetes self-management education, referral, attendance

The Centers for Disease Control and Prevention (CDC, 2017), reports that within the last 20 years, the number of American adults diagnosed with diabetes has more than tripled. The CDC (2017) states that although there currently is no cure for diabetes, it can be managed with a healthy lifestyle, medication, and Diabetes Self-Management Education (DSME). According to the American Diabetes Association (ADA) and the American Association of Diabetes Educators, DSME facilitates the knowledge needed for diabetes self-care (ADA, 2017; Beck et al., 2017). Studies have shown DSME has the ability to improve patient outcomes; therefore, it is important that healthcare providers utilize this resource (ADA, 2017; Beck et al., 2017).

Statement of the Problem

According to the CDC (2016), more than 29 million or 9.3% of Americans have a diagnosis of diabetes; and roughly 1.7 million new cases will be diagnosed yearly. Genetic and environmental factors influence diabetes mellitus; complications can be costly, debilitating, and sometimes deadly (CDC, 2016; Papadakis, McPhee, & Rabow, 2017). The ADA, *Standards of Medical Care in Diabetes-2017*, recommends that all people with diabetes attend DSME in order to facilitate the knowledge, skills, and ability necessary for diabetic self-care (ADA, 2017; Powers, 2016). The Office of Disease Prevention and Health Promotion (ODPHP, 2017), Healthy People 2020, set a diabetic patient education attendance target goal of 62.5% for adults aged 18 years and above. Despite ADA guidelines and national target goals, provider referral and patient attendance to DSME remains suboptimal in many healthcare facilities (Carroll, Hammond, & Leeper, 2015; CDC, 2014; Macy, Shearer, & Hanshaw, 2014; ODPHP, 2017; Schafer et al., 2013; Schwennesen, Henriksen, & Willaing, 2016; Shaji, Kumpatla, & Viswanathan, 2012).

Background and Significance

Diabetes mellitus is a serious public health concern. In 2014, the United States listed diabetes mellitus as the seventh leading cause of death (CDC, 2016; Grillo et al., 2013, Papadakis et al., 2017). Serious complications such as nephropathy, retinopathy, neuropathy, cardiovascular disease, and lower-limb amputations can occur in patients with poorly controlled blood glucose (CDC, 2016; Papadakis et al., 2017). The ADA (2015) estimates that for the year 2012, in the United States alone, the total cost of diagnosed diabetes was \$245 billion.

This chronic condition requires patients to make a multitude of daily self-management decisions and be able to perform complex care activities (Powers et al., 2015). In order for patients to gain the knowledge and skills necessary for self-care, the ADA recommends all diabetic patients attend DSME (ADA, 2017). DSME helps to support informed decision-making, problem-solving, self-care behaviors, patient/provider collaboration, improved clinical outcomes, and quality of life in a cost-effective manner; therefore, adherence to standards of medical care is imperative (ADA, 2017; Bajaj, Aronson, Venn, Ye, & Sharaan, 2016; Brunisholz et al., 2014; Karakurt & Kasikci., 2012; Murray & Shah, 2016; Nicoll et al., 2014; Peros, James, Nolan, & Meyerhoff, 2016; Powers et al., 2015; Weaver et al., 2014).

Assessment

A San Antonio, Texas family practice clinic was the site of this quality improvement (QI) project. The clinic is part of a large non-profit healthcare organization that has multiple sites throughout San Antonio and surrounding areas. The evidenced-based project interventions aimed to increase DSME referral and attendance. The staff involved included one physician, one family nurse practitioner, and three medical assistants.

In 2014, based on the clinics zip code, the surrounding area reported a total population of

42,443 individuals (United States Census Bureau [USCB], 2014). Total population sex distribution was 48% male and 52% female (USCB, 2014). Race was reported as 82% White, 4% Black, less than 1% American Indian/Alaska Native, 4% Asian, less than 1% Native Hawaiian/Other Pacific Islander, 3% two or more races, and 6% some other race (USCB, 2014). The population surrounding the clinic was 49% Hispanic and 51% non-Hispanic (USCB, 2014). Approximately, 92% reported having a high school diploma or higher and 47% reported having a bachelor's degree or higher (USCB, 2014). Median household income was \$56,996; 14% of the population reporting living below the poverty level (USCB, 2014).

The population diagnosed with diabetes is higher in Bexar County than that typically found at the state and national level (City of San Antonio Metropolitan Health District, 2016). According to the City of San Antonio Metropolitan Health District (2016), in 2014, 14.2% of Bexar County adults were diagnosed with diabetes. Similarly, in 2014, only 10.6% of Texas residents and 9.3% of Americans were diagnosed with diabetes (City of San Antonio Metropolitan Health District, 2016).

According to aggregate clinic data from January 2016 to December 2016, approximately 3,714 patients, 18-years and above, received care at the northwest facility. Females accounted for 55% of the population and males accounted for 45%. The top three race/ethnicities served in the clinic were White, Hispanic, and Black. The top three insurances received at the clinic were Medicaid, no insurance, and Blue Cross Blue Shield PPO. The age group most frequently served was 50 to 59-years at 25.6%. The age group least frequently served was 80-years and above at less than 1%. The top three adult diagnoses were essential (primary) hypertension ($n = 1,041$), type 2 diabetes ($n = 793$), and acute upper respiratory infection ($n = 436$).

Organization's Readiness for Change

The tool, Practice Improvement Capacity Rating Scale, was used to determine the healthcare organizations level of readiness for change (Aligning Forces for Quality [AFQ], 2014) (Appendix A). The Practice Improvement Capacity Rating Scale scoring system indicates whether a practice is ready to undertake a QI project (AFQ, 2014). The reliability and validity for the scale was not provided within the literature (AFQ, 2014). Aligning Forces for Quality, a Robert Wood Johnson Foundation effort, created the scale based on a “literature review of factors driving successful execution of QI initiative and extensive input from Humboldt County Alliance Practice Coaching Program” (AFQ, 2014, p. 1).

A score of 0 to 99 indicates that the practice is not ready for a QI project (AFQ, 2014). A score of 100 to 249 indicates that the practice has limited capacity to work on a QI project; but may be ready in the future (AFQ, 2014). A score of 250 or greater indicates that the practice is ready and capable of immediately conducting a QI project (AFQ, 2014). In addition to scoring a 250 or greater, the organization must pass all criteria with a weight of 3 (AFQ, 2014).

In-person unstructured/semi-structured individual interviews and unstructured direct observations, suggested that all staff stakeholders were ready for change. Key management stakeholders in-person individual interviews provided insight into the healthcare organizations ability to undertake a QI project. Based on the interviews and observations, the healthcare organization and the specific Northwest San Antonio family practice clinic scored a 255 and met all must-pass criteria (Appendix A). This indicated that the practice was ready and capable of immediate QI work (AFQ, 2014).

Project Identification

According to the ADA (2017) *Standards of Medical Care in Diabetes-2017*, there are four critical time points providers should refer patients to DSME, including at diagnosis, annually, when new complicating factors arise, and when transitions in care occur. Approximately 21.4% ($n = 793$) of the clinic's patient population, from January 2016 to December 2016, was diagnosed with type 2 diabetes. According to the clinic's diabetic educator, only 5.8% ($n = 46$) of the type 2 diabetic patient population received a referral for DSME. Based on the aggregate data, it appears providers are not following ADA standards of care.

As stated previously, ODPHP (2017) Healthy People 2020 set a diabetic patient education attendance target goal of 62.5% for adults aged 18 years and above. According to the clinic's diabetic educator, only 1.5% ($n = 12$) of the type 2 diabetic patient population attended DSME. This is significantly below the national and Texas average; nationally an average of 55.3% of diabetic Americans and 46.6% of diabetic Texans attend DSME (CDC, 2014).

Purpose and Objectives

The purpose of this QI project is to increase provider adherence to the ADA *Standards of Medical Care in Diabetes-2017* DSME guidelines; thereby improving the quality of care provided and assisting the clinic to achieve the Healthy People 2020 DSME patient attendance target goal (ADA, 2017; ODPHP, 2017). The objectives of this QI project are:

- Increase the 5.8% diabetes self-management education referral rate to 70% among patients with type 2 diabetes with a hemoglobin A1c test result of at least 8%, are at least 18 years of age, and/or have clinic provided insurance, eight weeks after intervention implementation.
- Educate 100% of staff members pre-intervention on a) the importance of DSME referral,

b) how to order DSME correctly, c) when to provide DSME patient information material and where DSME information material can be found, and d) roles, responsibilities, and clinic policies regarding DSME.

- Staff provides 100% of indicated patients with printed information about the clinic offered DSME program.
- Increase 1.5% DSME patient attendance to 56% among patients with type 2 diabetes with hemoglobin A1c test result of at least 8%, are at least 18 years of age, and/or have clinic provided insurance, eight weeks after intervention implementation.
- Evaluate DSME enrollment with student created enrollment evaluation form for two months following intervention implementation.

Anticipated Outcomes

By meeting these objectives, it was anticipated that there would be an increase in DSME provider referral and patient attendance. This is significant because the QI project may help the clinic provide care based on current ADA (2017) guidelines and possibly achieve ODPHP (2017) Healthy People 2020 national DSME attendance benchmark goals. DSME in type 2 diabetic patients may help to decrease hemoglobin A1c, decrease onset and/or advancement of diabetic complications, positively affect behavioral/psychosocial aspects in diabetic patients, and decrease overall lifetime healthcare cost (ADA, 2017; Powers et al., 2015). Providing patients with the needed education to manage type 2 diabetes is essential in order to improve clinical outcomes (ADA, 2017). Specific benchmarks for this project include:

- By June 5, 2017, 100% of staff members will be educated on a) the importance of DSME referral, b) how to order DSME correctly, c) when to provide DSME patient information material and where DSME information material can be found, and d) roles,

responsibilities, and clinic policies regarding DSME.

- By August 1, 2017, the DSME referral rate will be 70%.
- By August 1, 2017, staff will provide 100% of indicated patients with printed information about clinic offered DSME program.
- By August 1, 2017, the DSME attendance rate will be 56%.
- By August 1, 2017, it is anticipated patients will indicate that student interventions encouraged DSME attendance on enrollment evaluation form.

Summary and Strength of the Evidence

The ADA (2017) recommends that all patients with diabetes participate in DSME. ODPHP (2017) Healthy People 2020 set a national target goal of 62.5% patient attendance to DSME. Despite ADA clinic practice guidelines and national benchmark goals, DSME referral and attendance continues to be an area of concern. A number of qualitative and observational studies have been conducted to assess barriers to DSME referral and attendance (Macy et al., 2014; Schafer et al., 2013; Schafer et al., 2014; Winkley et al., 2014).

Macy, Shearer, and Hanshaw (2014) conducted a qualitative study on primary care physicians that explored factors that prevented them from referring patients to DSME. Barriers identified included provider lack of awareness about DSME, physician perceived lack of patient motivation to attend class, confusing referral process, cost, and poor communication/follow-up between provider and the diabetic educator (Macy et al., 2014). Based on the findings, Macy et al. (2014) recommends that physicians be educated about DSME benefits, DSME referral forms are simplified and are integrated into electronic medical records, and that referrals to DSME are confirmed with the physician's office.

Winkley et al. (2014) conducted a qualitative study that explored reasons for DSME non-

attendance among people with a recent type 2 diabetes diagnosis. Barriers identified included lack of provider informing/offering patients DSME, unmet personal preferences (e.g. time of class), patient lack of perceived DSME benefit, patient lack of information about DSME, patient shame and stigma of diabetes (Winkley et al., 2014). Based on the findings, Winkley et al. (2014) recommends that providers be educated about DSME, providers offer alternatives to standard group education, and that providers have open discussion with patients about diabetes self-management.

Schafer et al. (2014) conducted a qualitative study to analyze patients' attitudes towards diabetes education and assess barriers to participation. Barriers identified included physician influence, physical/psychosocial health, patient knowledge, and motivational factors (Schafer et al., 2014). Based on the findings, Schafer et al. (2014) recommends that providers encourage patient participation in diabetes education, providers encourage individualized diabetic education that is adapted to the patient's specific situation, and providers encourage non-participation in diabetes education only if the patient demonstrates sufficient diabetes knowledge with slightly increased blood sugar values that pose no risk or harmful consequences (Schafer et al., 2014).

Schafer et al. (2013) performed a cross-sectional observational study on 165 DSME participants and 132 DSME non-participants. The study found that a total of 95% of participants and 36% of non-participants received recommendations to attend DSME (Schafer et al., 2013). Among non-participants the most common barrier for DSME attendance was patient attitude; in other words, they felt their diabetes knowledge was sufficient (Schafer et al., 2013). Another common barrier for non-participation was that the patient felt it was not their responsibility to manage their diabetes; instead, they felt it was the responsibility of their physician (Schafer et al., 2013). Schafer et al. (2013) recommends physicians refer patients to DSME in order to increase

participation rate, due to the strong association between physician recommendation and DSME participation. Schafer et al. (2013) also recommends that physicians explore their patient's perceptions about diabetes and diabetes treatment.

Based on the literature it appears educating providers about DSME, informing/educating patients about DSME, and provider recommendation/referral to DSME can help to increase referral and attendance rates. The strength of the evidence is low due to the fact that many of the studies are qualitative or observational. Many of the barriers identified in the literature have been identified at the Northwest San Antonio family practice clinic as well.

There is a lack of evidence regarding interventions to increase DSME referral and attendance. A review of the literature found no interventional studies that discussed interventions to increase DSME referral and attendance. An established diabetic educator was asked for their opinion on the subject matter. The diabetic educator stated referral and attendance to DSME is a major problem in the diabetic health care field. The diabetic educator also stated that they were unable to find interventional studies to increase DSME referral and attendance.

Review of the literature did bring to light a similar referral and attendance issue in cardiac rehabilitation (CR). CR is underutilized within the United States (Dahhan et al., 2015; Grace et al., 2012a; Grace et al., 2012b; Gravely, Anand, Steward, & Grace, 2014). Like DSME, CR is a program that educates patients about exercise, nutrition, and disease/risk factors (American Heart Association, 2016).

Dahhan et al. (2015) conducted a quasi-experimental research design study to evaluate CR referral rate and participation after an intervention consisting of provider education on CR and implementation of a formal referral system. The sample size consisted of 375 cardiac patients from Georgia Regents Medical Center; 66 patients were referred to CR and 309 patients

were not referred (Dahhan et al., 2015). The average age of the participants was 61.1, 58.7% male, 63.5% Caucasian. Prior to the intervention referral rate was 17.6%, after the intervention referral rate was 88.96%; also, CR participation rate increased by 32.8% (Dahhan et al., 2015).

A study by Grace et al. (2012b) compared rates of referral, enrollment, and participation following a systematic versus non-systematic CR referral. Systematic referral refers to standard discharge orders that include universal CR referral, while non-systematic referral is defined as usual care or referral at the discretion of the physician (Grace et al., 2012b). A sample of 2,453 patients recruited from 11 community and academic hospitals between Windsor, Sudbury, Ottawa, and Ontario between 2006 and 2008 was analyzed; 1,376 were referred to CR via systematic strategy (Grace et al., 2012b). Patients mean age 64.6, 23.1% female, 84.9% white, and 48.8% family income greater than \$50,000; most frequent comorbidities included diabetes and musculoskeletal problems (Grace et al., 2012b). The study found that systematic referral resulted in significantly greater CR referral and enrollment among patients who are obese, have a low socioeconomic status, and have a lower education level (Grace et al., 2012b).

Another study by Grace et al. (2012a) used a prospective quasi-experimental design to examine the effect of pre-approved, pre-booked, and early ed. Interventions on CR referral and attendance. The pre-approved intervention consisted of leadership endorsement of a policy that allowed allied health professionals to refer all indicated patients (Grace et al., 2012a). The pre-booked intervention consisted of booking the patient an appointment for CR before discharge (Grace et al., 2012a). While the early ed. Intervention consisted of having the patient attend CR as quickly as possible after discharge (Grace et al., 2012a). The sample included 2,635 cardiac patients from 11 Ontario hospitals; 1,809 of these patients completed a post-test survey (Grace et al., 2012a). Mean age of the patients was 65.39, 25% were female, 83.4% were white, and 50%

reported a family income greater than \$28,500 (Grace et al., 2012a). Grace et al. (2012a) found that pre-approved and early ed. Interventions significantly increased referral and enrollment, the pre-booked intervention did increase referral and enrollment but results were not significant; CR participation increased uniformly with the amount of CR enrollment (Grace et al., 2012a).

Despite the benefits of CR, women are referred to CR at lower rates than males. A prospective cohort study by Gravely, Anand, Stewart, and Grace (2014) examined sex differences in CR referral and enrollment, as well as the impact of referral strategies on women. The sample included 452 CR retained women from 11 Ontario hospitals (Gravely et al., 2014). The average age of the women was 66.9, 83% white, and 70.9% achieved high school or greater education (Gravely et al., 2014). The study found that women are more likely to be referred and enrolled in CR by using combined systematic and liaison-facilitated referral strategies (Gravely et al., 2014). Compared to usual care, systematic referral strategies resulted in 68.6% greater referral rates (Gravely et al., 2014). This study suggests that systematic approaches are related to higher rates of CR referral for women; authors suggest that systematic referral may help with patients who are socioeconomically disadvantaged (Gravely et al., 2014).

Study findings for these four research articles have limited generalizability due to the sample population. The majority of patients were white, male, and greater than the age of 60. Strengths of the research articles included: large study population size, quasi-experimental designs, and North American study sites (i.e. United States and Canada). Weaknesses found in the articles included: older population, patient in a hospital setting, non-randomized samples, and studies analyzed at CR not DSME. As stated previously, gaps in the literature include lack of research on interventions for DSME referral and attendance. What the literature is able to provide is known barriers of DSME referral and attendance (Macy et al., 2014; Schafer et al.,

2013; Schafer et al., 2014; Winkley et al., 2014). Future studies about DSME need to include interventions that are able to increase referral and attendance rates in family practice settings.

Methods

The QI project took place at a family practice clinic located on the Northwest side of San Antonio, Texas. The population of focus for the intervention included clinic staff members (physician, family nurse practitioner, clinic licensed vocational nurse, and medical assistants) and patients diagnosed with type 2 diabetes who have a hemoglobin A1c test result of at least 8%, are at least 18 years old, and/or have clinic provided insurance. Before the initiation of the QI project, there was no formal DSME referral process. Data was collected retrospectively on 200 eligible patient charts; the convenience sample consisted of 50 charts per month for April, May, June, and July of 2017. Prior to initiation of the QI project, the proposed plan was submitted to the University of the Incarnate Word Institutional Review Board for approval. The QI project was approved by exempt review as it was determined to be less than minimal risk.

Project Intervention

The QI project was designed to improve practice and adherence of the ADA (2017) guidelines for diabetes self-management education. A retrospective chart review of 200 eligible medical records was conducted; 100 pre-intervention and 100 post-intervention charts were reviewed to determine if the interventions were effective in improving referral and attendance rates to the clinic offered diabetes self-management education program. Project interventions included, a) electronic medical record modifications, b) staff training, c) the development of patient diabetes self-management education information material, d) scheduling of patient diabetes self-management education appointments, and e) enrollment evaluation. The electronic medical record modifications, staff training, and development of patient diabetes self-

management education information material occurred prior to intervention implementation.

Electronic medical record modifications. The clinic's information technology department modified the diabetes plan of care order set on the existing electronic medical record software. Three modifications took place, a) the standardization of diabetic orders within the order set, b) the addition of a task box that allowed providers to order DSME within the diabetic order set, and c) the addition of standardized information about DSME that could be added to the patient's plan of care at the providers discretion. The electronic medical record modification provided a visual reminder as to what the clinic expected providers to order for a type 2 diabetic patient.

Staff training. The student provided one 10-minute staff training PowerPoint session during a weekly Friday staff meeting. Staff training discussed: a) ADA critical time periods to refer a patient to DSME, b) Healthy People 2020 DSME patient attendance national target goal, c) clinic derived recommendations as to when to refer a patient to DSME (clinic recommendation: systematically refer all indicated patients age 18 and above, who have a hemoglobin A1c test result of at least 8%, a diagnosis of or a new diagnosis of type 2 diabetes, and/or covered by clinic offered insurance), d) evidenced-based literature expected patient improved outcomes, and e) the roles and expectations of team members (expectation: know how to order DSME, know how to schedule DMSE, where to find patient DSME information material, and when to provide patient with DSME information material).

Patient diabetes self-management education information material. Patient information material consisted of a short summary about the DSME class; it was available to be added to the patient's plan of care at the provider's discretion (Appendix B). Summary was available in both English and Spanish. During staff training, providers were informed that all

patients referred to DSME were required to have the DSME information material added to the plan of care discharge note so that the patient could take the information home. DSME information material reemphasized the information received during the patient's visit with the provider.

Scheduling of diabetes self-management education appointments. Typically, the clinic has medical assistants schedule patient follow-up appointments, because the DSME class is offered in-house they would also schedule DSME appointments. When the medical assistant printed out the discharge paperwork, they were able to see that the provider ordered DSME. The medical assistant would then schedule the patient an appointment for the DSME class and inform the patient of the date and time they needed to attend. The appointment date and time will be present on the discharge paperwork that the patient takes home. Medical assistants also had the ability to suggest DSME referral to the provider based on observed patient needs.

Enrollment evaluation. The enrollment evaluation form evaluated which intervention encouraged the patient to attend DSME (Appendix C). Prior to the beginning of class, the student passed out the enrollment evaluation form. A cover letter was present on top of the form explaining the purpose, an explanation of why the patient was asked to participate, a statement about the amount of time it will take to complete the form, description of stresses and benefits associated with the form, an explanation on how to ask questions about the form, a statement informing the patient that they can refuse to fill out the form, and a statement about confidentiality (Appendix E). If the patient returned the form, it was considered to be adequate informed consent which allowed for the use of data.

Data collection and analysis. If the patient was eligible (type 2 diabetic, hemoglobin A1c test result of at least 8%, at least 18 years old, and/or had clinic offered insurance) pre- and

post-intervention data collected included presence of referral, appointment, DSME information material in the electronic medical record; and age, sex, race, ethnicity, hemoglobin A1c test result, and insurance. Data was collected on a spreadsheet for analysis. Eligible patients were identified by using the international classification of disease¹⁰ code E11 (type 2 diabetes). From April 2017 to May 2017 the student obtained pre-intervention data; post-intervention data was collected June 2017 to August 2017. Other data collected included the DSME attendance rate. That is, the student reviewed the number of patients who were registered for the class and assessed how many actually attended. Attendance pre-intervention data collected April 2017 to May 2017; post-intervention data June 2017 to August 2017. Before the start of the diabetic class, the student distributed the enrollment evaluation form from June 2017 to July 2017 (Appendix C). Demographics were examined using descriptive statistics and frequency analyses. Independent sample t-test were used to compare referral and attendance rates between the pre- and post-intervention cohort.

Organization Barriers and Facilitators

Organization barriers included lack of DSME marketing, limited class availability, provider opposition, and staff shortage. The clinic did not allow posters or marketing of the DSME class to hang on the walls or be placed on computer screen savers. Patients were not aware of the clinic offered DSME class unless clinic staff informed them. The clinic offered DSME class, only allowed twenty patients to attend. The DSME class is only offered once a month at one time period. The lack of class availability decreased the number of patients that were able to attend. One provider did not want to offer DSME to patients' due to a disagreement on how the diet portion of the class was taught. Also, when the intervention was implemented, the clinic was placed on a hiring freeze, leaving the clinic short one medical assistant.

Organization facilitators included clinic management, clinic offered insurance, medical assistants, funding, location, and intervention integrated into clinic software. The clinic manager felt increasing attendance to DSME was a priority and encouraged staff to refer patients. During the intervention, the clinic offered clinic based insurance to uninsured patients. In order to receive healthcare type 2 diabetic patients with clinic insurance had to attend one DSME class for the year 2017. Medical assistants increased provider DSME referral compliance; they took it upon themselves to inform providers of the patient's insurance requirement or need for education. No funding was required for staff or learning site; the clinic was already paying staff, patients were not utilizing the free service. The clinic offered the DSME class on site; patients did not have to travel to unknown destinations. The intervention was integrated into the existing software therefore minimal training was needed.

Results

Electronic medical record modifications to the diabetic discharge order set occurred pre-intervention. On May 12, 2017, 100% of the staff was educated. Education included a) the importance of diabetes self-management education referral, b) how to order diabetes self-management education correctly, c) when to provide diabetes self-management education patient information material and where diabetes self-management education information material could be found, and d) roles, responsibilities, and clinic policies regarding diabetes self-management education.

Pre-intervention, April and May 2017, a convenience sample of 100 eligible electronic medical records were reviewed in order to obtain patient demographics, DSME provider referral rate, and DSME patient attendance rate. Of these 100 eligible patient electronic medical records, 9% of the patients were referred to the clinic offered DSME program and 6% of the patients

attended the clinic offered DSME program. The pre-intervention sample average age was 50.7 ± 9.6 , 62% were reported to be female, 83% identified as Hispanic, and the average hemoglobin A1c test result was $9.2\% \pm 1.8\%$.

Table 1

Demographics: Pre-Intervention

	Total	Non-Referred	Referred	Attended DSME
Patients	n = 100	n = 91	n = 9	n = 6
Age	50.7 ± 9.6	51.3 ± 9.7	44.3 ± 6.4	50.7 ± 9.6
Female	62 (62%)	55 (60.4%)	7 (77.8%)	5 (83.3%)
White	7 (7%)	7 (7.7%)	0 (0%)	0 (0%)
Hispanic	83 (83%)	76 (83.5%)	7 (77.8%)	4 (66.7%)
Black	7 (7%)	5 (5.5%)	2 (22.2%)	2 (33.3%)
Asian	3 (3%)	3 (3.3%)	0 (0%)	0 (0%)
Hemoglobin A1c	$9.2\% \pm 1.8\%$	$9\% \pm 1.7\%$	$10.9\% \pm 1.7\%$	$10.5\% \pm 1.2\%$
Clinic Insurance	46 (46%)	42 (46.2%)	4 (44.4%)	4 (66.7%)

Post-intervention, June and July 2017, a convenience sample of 100 eligible ERMs was reviewed in order to obtain patient demographics, DSME provider referral rate, and DSME patient attendance rate. Of these 100 eligible patient electronic medical records, 31% of the patients were referred to the clinic offered DSME program and 11% of the patients attended the clinic offered DSME program. The post-intervention sample average age was 52.5 ± 9.1 , 61% were reported to be female, 84% identified as Hispanic, and the average hemoglobin A1c test result was $9.3\% \pm 2.1\%$. Based on the post-intervention demographics it appears that patients were more likely to be referred if they had a higher than average hemoglobin A1c test result, were of Hispanic origin, and/or reported utilizing the clinic offered insurance. Results

demonstrate that patients were more likely to attend the clinic offered DSME program if they were younger than the mean sample, were of Hispanic origin, had a lower than average hemoglobin A1c test result, and/or reported utilizing the clinic offered insurance.

Table 2

Demographics: Post-Intervention

	Total	Non-Referred	Referred	Attended DSME
Patients	n = 100	n = 69	n = 31	n = 11
Age	52.5 ± 9.1	52.6 ± 9.5	52.2 ± 8.2	47.6 ± 9.3
Female	61 (61%)	44 (63.8%)	17 (54.8%)	6 (54.5%)
White	10 (10%)	6 (8.7%)	4 (12.9%)	1 (9.1%)
Hispanic	84 (84%)	58 (84.1%)	26 (83.9%)	10 (90.9%)
Black	6 (6%)	5 (7.2%)	1 (3.2%)	0 (0%)
Hemoglobin A1c	9.3% ± 2.1%	9.3% ± 2.1%	9.5% ± 2.2%	8.4% ± 2.1%
Clinic Insurance	59 (59%)	36 (52.2%)	23 (74.2%)	10 (90.9%)

The clinic did not reach the student-set goal of 70% patient referral rate. However, during the course of the QI project the provider referral rates steadily increased. The average DSME referral rate pre-intervention was 9%; while the average DSME referral rate post-intervention was 31%. Peak referral rate occurred July 2017; with a total of 42% of the sample having a documented referral for DSME in the electronic medical record.

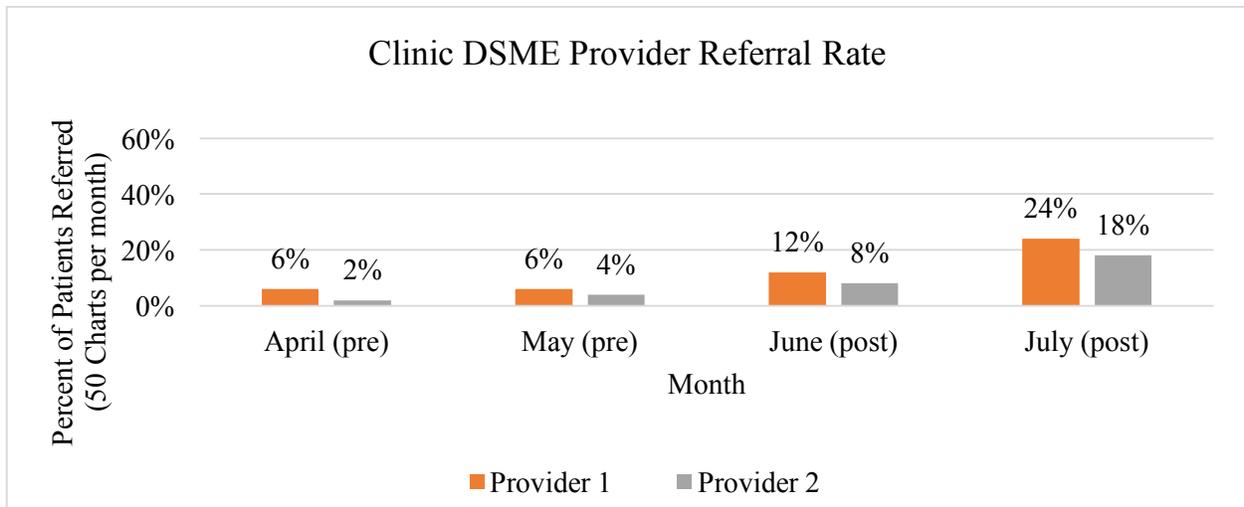


Figure 1. The bar graph displays the total DSME referral rate by provider during the pre-intervention and post-intervention period.

During the course of the QI project, the monthly DSME attendance rate did not steadily increase. In the pre-intervention months, the attendance rate remained steady at 6%. During the first post-intervention month, the attendance rate increased to 16%. Unfortunately, for the second post-intervention month, the monthly DSME attendance rate returned to pre-intervention levels. The clinic did not reach the student DSME attendance target goal of 56%. Cumulatively, the clinic achieved a DSME attendance rate of 8.5%.

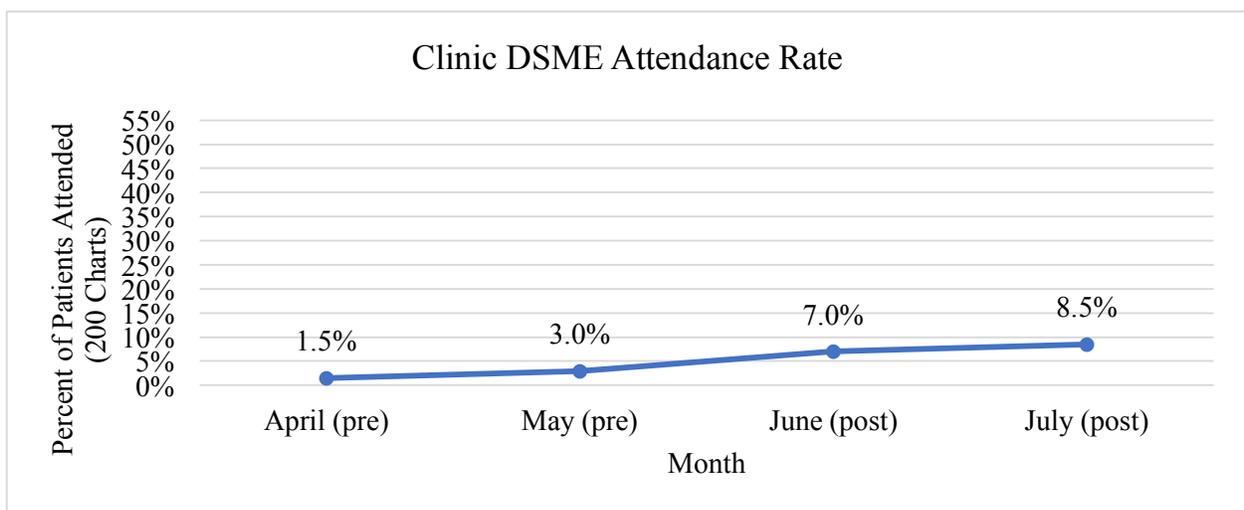


Figure 2. The line graph displays the cumulative DSME attendance rate for the clinic.

Overall, the average referral rate increased from 9% to 31%. An independent sample t-test was conducted to compare referral in the pre-intervention and post-intervention conditions. There was a significant difference in the scores for pre-intervention ($M = .09$, $SD = .29$) and post-intervention ($M = .31$, $SD = .46$) conditions; $t(198) = -4.03$, $p < .001$. These results suggest that the student interventions (staff training and discharge order standardization) did have an impact on DSME referral. Overall, the average attendance rate increased from 6% to 11%. An independent sample t-test was conducted to compare attendance in the pre-intervention and post-intervention conditions. There was not a significant difference in the scores for pre-intervention ($M = .67$, $SD = .5$) and post-intervention ($M = .52$, $SD = .51$) conditions; $t(28) = .71$, $p = .49$. These results suggest that the student intervention (scheduling of patient appointments) did not have an impact on DSME attendance.

Patients that attended the clinic offered DSME class were asked to fill out an enrollment evaluation survey (Appendix D). It is important to note, that surveys distributed were greater than the number of post-intervention attendance patients identified. This is due to patients being able to enroll themselves in class and patients being enrolled by mail or phone. Twelve surveys were distributed by and returned to the student. Out of these, 75% reported being enrolled in the DSME class during an office visit, 8.3% reported enrolling themselves in the program, and 16.7% reported being enrolled in another way (e.g. telephone or mail) (Appendix D). Question 2 survey results indicated that out of the nine patients that were enrolled in DSME during an office visit, 77.8% agreed that a referral from the doctor encouraged them to attend the clinic offered DSME class (Appendix D). Question 3 survey results indicated that out of the nine patients enrolled in DSME during the doctor's office visit, 100% left the clinic with an appointment for DSME; 66.7% agreed that leaving the clinic with a scheduled appointment, encouraged them to

attend the clinic offered DSME class (Appendix D). The patient enrollment evaluation survey indicated that most patients agreed or strongly agreed that referral from a provider and a scheduled appointment to DSME encouraged them to attend the educational program.

Question 4 of the patient enrollment evaluation survey was discarded (Appendix C). Chart audits indicated that staff did not provide patients with appropriate educational material. The clinic did not reach the student-set goal of 100% distribution of the DSME patient information material. Post-intervention education material distribution remained at 0%. Providers stated they did not distribute the education material because they forgot or had a lack of time to chart correctly.

Discussion

Despite the proven effectiveness of DSME, its utilization by providers and patients remains suboptimal at the Northwest San Antonio family practice clinic. The greatest success was a 22% increase in DSME referrals. Unfortunately, the clinic did not meet student-set goals for patient referral, patient attendance, and patient education. It is necessary for the family practice clinic to continue to assess for and identify any unique barriers to DSME referral and participation in order to continue to improve performance and patient outcomes.

The pre-intervention DSME referral rate of 9% was well below ADA (2017) DSME referral guidelines. The post-intervention DSME referral rate of 31% was an improvement, but still below the student-set goal of 70%. Interventions that contributed to the increased referral rate included staff education and the standardization of the DSME referral process. Interventions to increase referral were found to be statistically significant; $p < .001$. An unforeseen event that contributed to the increase in referral rate was the actions of the medical assistants. Frequently, the medical assistants were seen to suggest to the provider that a patient should be referred to

DSME based on insurance or professional opinion about the patients need for education.

A study by Grace et al. (2012a) found that a pre-approved intervention which consisted of leadership endorsement of a policy that allowed allied health professionals to refer all indicated patients significantly increased referral and enrollment rates to a cardiac education program. Referral may be best left to the medical assistants if a firm policy is put in place. Barriers to the referral process included limited DSME availability and staff workload. The clinic offered DSME class is only provided on one day of the month and at one time; patients may have refused referral because they would not be available to attend at the scheduled time. Winkley et al. (2014) conducted a qualitative study that found that unmet patient personal preferences (e.g. time of class, parking, and location) contributed to DSME non-attendance. Unmet patient personal preferences could have contributed to the suboptimal referral rate. Providers did not chart in the electronic medical record the reason for lack of DSME referral. During intervention implementation, the clinic was short one medical assistant; this could have contributed to the suboptimal referral rate due to an increased staff workload and lack of time to refer.

The pre-intervention DSME attendance rate of 6% was well below the ODPHP (2017) Healthy People 2020 national target goal of 62.5%. The post-intervention DSME attendance rate of 11% was an improvement, but still below the student-set goal of 56%. Interventions that contributed to the increased attendance rate included providing patients with a scheduled appointment before leaving the clinic and the clinic's diabetic educator calling patients to remind them about their appointment. Interventions to increase attendance were not found to be statistically significant; $p = .49$.

Dahhan et al. (2015) and Grace et al. (2012b) reported that an increase in referrals were found to increase participation in a cardiac educational program. In the first post-intervention

month, June 2017, attendance increased to 16%. However, in the second post-intervention month, July 2017, the attendance rate returned to the pre-intervention rate of 6%. An unforeseen event that occurred that may have contributed to the decrease in DSME attendance was staff departure. The week of the July 2017, DSME class, the diabetic educator was replaced. The new diabetic educator did not call patients to remind them of their appointment. No other changes were noted to occur that can account for the drastic decrease in patient attendance. Factors such as reminder calls may influence attendance rates; further research would be needed to identify if the lack of a reminder call is the reason for the return of pre-intervention attendance rates at the family practice clinic.

The enrollment evaluation survey was given to patients who attended DSME post-intervention. Based on the survey results, patients agreed or strongly agreed that provider referral (77.8%) and leaving with a scheduled appointment (66.7%) encouraged them to attend the clinic offered DSME program (Appendix D). These results correlate with Schafer et al. (2013; 2014) study findings. Schafer et al. (2013; 2014) recommended that providers encourage patients to attend diabetes education due to the strong association between physician recommendation and DSME participation. Again, please note that the fourth question on the patient enrollment evaluation survey was excluded from the QI project because 0% of providers placed the DSME patient information material in the discharge note.

Limitations

At the start of project implementation, the clinic lost one medical assistant; shortly after that, the clinic was placed on a hiring freeze. The shortage in staff may have affected the overall referral of patients to DSME. One provider refused to follow clinic DSME protocols; reasons included disagreements with how the diet portion of the class was taught and that a student nurse

practitioner was bringing about the clinic changes. Provider apprehension may have affected the overall referral of patients to DSME. At this time, the clinic did not want to use a traditional electronic referral; instead, the clinic opted for an “in-house” referral. The “in-house” referral made the electronic referrals difficult to track and made the referral process seem less of a priority. The student did not take into account that medical assistants would place referrals for providers. The number of referrals placed could be largely due to medical assistant effort. In the future, a better way to monitor who placed referrals will need to be identified. In July 2017, upper management integrated a pop-up window that indicated patient insurance when a patient’s electronic medical record was opened; this could account for inflated provider referral rates for July 2017. As stated previously, the clinic lost their diabetic educator the week of the July 2017 class. The replacement educator did not provide patients with an appointment reminder call as the previous educator did. The July 2017, class attendance returned to pre-intervention rates. The lack of reminder calls may have contributed to the low DSME attendance rate for July 2017.

Recommendations

There were a significant number of patients that met the clinic eligibility criteria for DSME referral; eligibility criteria included hemoglobin A1c test result of at least 8%, patient at least 18 years of age, and/or presence of clinic provided insurance. Recommendations to increase referral and attendance to DSME include the full participation of staff, referrals that can be tracked without extensive audits, and utilization of a patient reminder system. A modification that may increase patient education is to have education that is printed out. Printed information would allow the medical assistants to be able to provide education as needed. The enrollment evaluation survey did indicate that the majority of patients agreed that provider DSME referral and scheduled DSME appointments at discharge encouraged them to attend DSME. Continued

studies with methods to increase provider and staff compliance for DSME referral are needed.

Implications for Practice

The referral rate pre-intervention was 9 out of 100 patients; while the referral rate post-intervention was 31 out of 100 patients. Patients agreed that a referral from their provider (77.8%) and leaving with a scheduled appointment (66.7%) encouraged them to attend DSME (Appendix D). The results of the QI project demonstrate that the interventions of staff education and the standardization of the DSME referral process encouraged the clinic to follow ADA (2017) DSME recommendations. The attendance rate pre-intervention was 6 out of 100 patients; while the attendance rate post-intervention was 11 out of 100 patients. The results of the QI project demonstrate that further research is necessary to find ways on how to improve patient attendance to DSME.

The referral portion of the QI project is anticipated to be sustainable. The referral process for DSME was integrated into the diabetic discharge order set, the cost and time to change the order set was described as minimal by the information technology department. Because of this, management informed the student that they would like to standardize more disease order sets in order to help the clinic achieve better patient outcomes. Further policy development and changes to practice guidelines are needed at the Northwest San Antonio family practice clinic. Policy suggestions include full compliance of staff with disciplinary actions for staff members that do not follow clinic policies. Although the QI project was implemented at a primary care office, staff education and the standardization of the DSME referral process could help to increase referral rates in other healthcare organizations.

Conclusion

Diabetes self-management education in type 2 diabetic patients may help to decrease hemoglobin A1c test results, decrease onset and/or advancement of diabetic complications, decrease overall lifetime healthcare cost, and positively affect behavioral/psychosocial aspects in diabetic patients (ADA, 2017; Powers et al., 2015). Providing patients with the education needed to manage type 2 diabetes is essential in order to improve clinical outcomes and avoid complications. The doctoral-prepared Advance Practice Registered Nurse is in a key position to assess organizations, identify systems, and facilitate organizational changes. A Doctor of Nurse Practice APRN has the potential to change patient outcomes because they have the ability to evaluate, integrate, translate, and apply evidence-based practice in the clinic setting. The use of information technology (standardization of diabetic discharge order set) allowed for the improvement of patient outcomes (increased referral and attendance to DSME).

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Appendices

Appendix A

Practice Improvement Capacity Rating Scale

Question	Weight	Criteria	Scripted Questions	Red (0 points)	Yellow (5 points)	Green (10 points)
1	3	<p>Commitment: Senior Leadership: QI Champion/ sponsor</p> <p>Senior leadership: person or group that has responsibility for designation of time, finances, and resources</p> <p>(Physician, RN, office manager)</p>	<p>Can you tell me about the commitment that senior leadership (the administration /the practice) has made to the project?</p> <ul style="list-style-type: none"> Do you have a designated leader? Is there a team that meets regularly? In terms of time, finances, resources? 	No designated leader for quality improvement or if designated, not actively engaged.	Leader designated for quality improvement work— however quality improvement team non-existent, or if exists, not meeting regularly to review project status/data.	Leader designated for quality improvement work and quality improvement team meets regularly to review projects status/data and discuss improvement opportunities .
2	3	<p>Commitment: Financial Resources</p>	<p>IF NOT ANSWERED ABOVE:</p> <p>How do the leader and the QI team fit in QI work with their other responsibilities in the practice?</p> <ul style="list-style-type: none"> Are they paid for working on a QI project or is it volunteer work? 	No time budgeted for QI activities. No specific funding to support QI activities.	Insufficient amount of FTE allocated for QI activities and/or limited/small amount of funding for QI activities.	Sufficient amount of dedicated FTE and funding allocated to QI activities.
3	3	<p>Level of Physician Leader Support</p>	<p>Do you have a physician leader who supports this effort?</p> <p>(Physician leader is one whom the other clinicians and staff look up to and</p>	Physician leader has not been engaged in discussions regarding QI initiatives or has not yet confirmed	Physician leader has confirmed their formal support of QI initiatives, but there are no regular meetings or	Physician leader demonstrates behaviors consistent with actively supporting QI efforts— this includes

			<p>identify as a leader.)</p> <ul style="list-style-type: none"> What is the relationship between this person and the QI team? 	<p>their formal support.</p>	<p>interactions to discuss/review progress.</p>	<p>convening regular meetings with QI team leaders to review progress and help address issues/challenges.</p>
4	3	Level of Practice Administrator Support	<p>Does your practice administrator or office manager support this effort?</p> <ul style="list-style-type: none"> How do they demonstrate this to the staff? (How does the staff know they support it?) Do they meet with the QI team? How do/will they help the QI team with this effort? 	<p>Practice administrator has not been engaged in discussions regarding QI initiatives or has not yet confirmed formal support.</p>	<p>Practice administrator has confirmed formal support of QI initiatives, but there are not regular meetings or interactions to discuss/review progress.</p>	<p>Practice administrator demonstrates behaviors consistent with actively supporting QI efforts—this includes convening regular meetings with QI team leaders to review progress and help address issues/challenges.</p>
5	3	Competing Priorities	<p>Are there any changes that have occurred/are going to occur that may have an effect on this project?</p> <p>Are there any other projects the practice will be working on while this QI project is going on?</p> <ul style="list-style-type: none"> How do you see them affecting this QI project? Do they overlap in terms of goals or data collection? 	<p>Currently converting to an electronic medical record</p> <p>OR</p> <p>Significant staff turnover/changes</p> <p>OR</p> <p># of QI projects competing for time of staff and resources</p> <p>OR</p>	<p>Modest competing priorities, such as end phase of electronic medical record conversion</p> <p>OR</p> <p>Other QI projects, but winding down soon</p> <p>OR</p> <p>Relatively stable staff and leadership structure.</p>	<p>No significant competing priorities</p> <p>OR</p> <p>Significant issues/challenges impacting execution of QI activities</p> <p>AND</p> <p>Stable staff and leadership structure.</p>

				Change in leadership expected or imminent OR Merger or acquisition anticipated in near future.		
6	2	Communication	<ul style="list-style-type: none"> Does the rest of the staff know about his effort? How have you kept the staff up to date with the projects in the past? How are you communicating the work being done by the QI team to the rest of the practice? 	Project not discussed at regular staff meetings, limited knowledge among practice physicians/staff, no data/information posted or distributed	Some effort devoted to sharing project information and updates with practice physicians/staff	Project information and updates discussed with practice physicians and staff at regular practice meetings, data/information shared, input/feedback recruited. Data posted in visible place.
7	2	Access/Use of QI Infrastructure/ Resources Available in the Community	<p>Does your practice participate in any community improvement efforts?</p> <p>Any EMR sponsored or trade industry sponsored improvement efforts?</p>	No practice awareness of QI infrastructure or resources available in the community.	Some awareness of QI infrastructure and resources available, but not yet accessing/using.	Practice is accessing/using QI infrastructure/resources available in the community.
8	2	Prior Experiences Executing QI Projects	<p>Tell me about the improvement work your practice has done in the past</p> <ul style="list-style-type: none"> What kind of experience do the members of the QI team bring to the effort? Do you keep a record of what 	No identifiable improvement interventions pursued to date.	Improvement interventions pursued; but no formal QI method used (Model For Improvement, Lean, Six Sigma, etc.)	Previous improvement interventions pursued using formal QI method.

			<p>you have tried and how it went?</p> <ul style="list-style-type: none"> How do you decide if what you try/change is working? (You are looking for answers that indicate they use data to drive improvement.) 			
9	2	QI team designated with appropriate representation	<p>Who is/will be on your QI team? Why?</p>	<p>No QI team in place</p> <p>OR</p> <p>Several team members identified for QI activities, but there is a lack of balance representing the testing to be done (e.g., no RN included on team for PCMH)</p>	<p>Team members identified for QI activities.</p> <p>Balanced representation of staff based on QI activity.</p> <p>No patient partner on QI team.</p>	<p>Team members identified for QI activities.</p> <p>Balanced representation of staff based on QI activity.</p> <p>Patient/parent part of the team.</p>
10	2	Reliability of data	<p>How reliable do you think your reports are?</p> <ul style="list-style-type: none"> Does the information seem accurate to you? Do you compare your data to other practices or national benchmarks? Is there someone who looks over the reports for accuracy? Does the QI 	<p>No designated point person reviewing data for accuracy.</p>	<p>Point person designated, but no defined process for monitoring accuracy/timeliness of data.</p>	<p>Accuracy/timeliness of data monitored and addressed.</p> <p>Quality leadership person/team discusses data accuracy at regular intervals and identifies/pursues improvement opportunities</p>

			team review the reports?			
11	2	Reliability of data collection	<p>How reliable do you think your data are?</p> <ul style="list-style-type: none"> Do you think the data you need are reliably entered into the electronic medical record with each encounter? Is there a way to tell if they are? Does everyone follow the same process for getting info/data into the electronic medical record? 	Data collection solely dependent on clinicians at time of encounter.	<p>Redundancy built into data collection process.</p> <p>Point person designated, but no defined process for monitoring accuracy/timeliness of data entry.</p>	<p>Defined process for monitoring accuracy/timeliness of data entry.</p> <p>Quality leadership person/team discusses data collection process at regular intervals and identifies/pursues improvement opportunities.</p>
12	2	<p>External Payment Incentives from Commercial/ Governmental Payors Linked to the QI Project</p>	<p>Is the practice being paid to participate in an improvement effort other than MU?</p> <p>Are you being paid to report on or meet quality measures?</p>	Not currently.	Currently being discussed by commercial/ governmental payors, but not yet in place.	Currently in place.
13	1	Meaningful Use	Where is your practice in terms of applying for meaningful use?	Not attested to meaningful use.	Meaningful use in design phase.	Meaningful use implemented and criteria met.
14	1	Source of IT support	<p>What do you do when you need to add fields to collect data or run reports?</p> <ul style="list-style-type: none"> Do you do this in office? Do you need to contact someone outside the office? 	No internal or external IT support available to the practice.	Internal or external IT support available to the practice, but not meeting needs of QI initiatives.	Internal or external IT support to the practice is meeting the needs of QI initiatives.

			<ul style="list-style-type: none"> Does this arrangement meet your needs/the needs for the QI project and QI team? 			
15	1	Use of electronic medical record /Registry/ Analytic Reporting Tool for Measurement/ Data Reporting	<p>What data will you be collecting for this project?</p> <p>How do you plan to collect the data you will need for this project?</p> <ul style="list-style-type: none"> Is the information currently collected in your E electronic medical record MR? Can you get reports based on the data from your electronic medical record easily? 	No electronic medical record.	Electronic medical record in place, but data fields linked to key measures not embedded, or related data reporting capabilities (electronic medical record, registry, or other analytic tool) no yet in place	Electronic medical record with data fields linked to key measures embedded, and data reporting capabilities in place.
Total Score						
Must-Pass Criteria						
Final Score-Circle Level	Red: 0-99		Yellow: 100-249		Green: 250 or greater and all must pass criteria met.	

Note. Copyright 2014 Aligning Forces for Quality, a Robert Wood Johnson Foundation. The tool Practice Improvement Capacity Rating Scale can be found at http://www.rwjf.org/content/dam/farm/reports/issue_briefs/2014/rwjf410315. The healthcare organization as well as the specific Northwest San Antonio clinic site scored a 255 and met all must-pass criteria; indicating that the practice is ready and capable of immediate quality improvement work (AFQ, 2014).

Appendix B

Patient Information Material

I have placed a referral for you to attend our diabetes self-management education class. This class will help you gain the knowledge, skills, and abilities necessary for diabetic self-care. This class will be provided at no cost to you. You are encouraged to bring a support person (example: family member or friend). Topics that will be covered in the class include: healthy eating, being active, monitoring blood sugar, taking medications, problem solving, healthy coping, and reducing diabetic risks. If you need to reschedule your appointment please call the diabetic educator at (phone number).

Appendix C
Enrollment Evaluation

1. How did you enroll in the diabetic class?

- a. During a doctor visit the office staff enrolled me.
- b. I heard about the diabetic class and I enrolled myself.
- c. Other: (*specify*) _____

2. Did the doctor refer you to the diabetic class during a past medical appointment?

Yes

No

If you answered YES, please rate how much you personally agree or disagree with the following statement, if NO please leave blank: The referral from the doctor encouraged me to attend the diabetic class.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
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3. After the doctor informed you that they were placing a referral, did you receive a date and time to attend the diabetic class before you left the clinic?

Yes

No

If you answered YES, please rate how much you personally agree or disagree with the following statement, if NO please leave blank: Leaving the clinic with a scheduled appointment encouraged me to attend the diabetic class.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
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4. When you left the clinic were you provided with printed diabetic class information?

Yes

No

If you answered YES, please rate how much you personally agree or disagree with the following statement, if NO please leave blank: Leaving the clinic with printed information encouraged me to attend the diabetic class.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
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Appendix D

Enrollment Evaluation Results

Question 1	Answer	Results
How did you enroll in the diabetic class?	During a doctor visit the office staff enrolled me.	75% (n = 9)
	I heard about the diabetic class and I enrolled myself.	8.3% (n = 1)
	Other: (<i>specify</i>):	16.7% (n = 2)
Question 2	Answer	Results
Did the doctor refer you to the diabetic class during a past medical appointment?	Yes	100% (n = 9)
	No	0% (n = 0)
If yes, please rate how much you personally agree or disagree with the following statement, if no please leave blank: The referral from the doctor encouraged me to attend the diabetic class.	Strongly Disagree/Disagree	11.1% (n = 1)
	Neither	11.1% (n = 1)
	Agree/ Strongly/Agree	77.8% (n = 7)
Question 3	Answer	Results
After the doctor informed you that they were placing a referral, did you receive a date and time to attend the diabetic class before you left the clinic?	Yes	100% (n = 9)
	No	0% (n = 0)
If yes, please rate how much you personally agree or disagree with the following statement, if no please leave blank: Leaving the clinic with a scheduled appointment encouraged me to attend the diabetic class	Strongly Disagree/Disagree	22.2% (n = 2)
	Neither	11.1% (n = 1)
	Agree/ Strongly/Agree	66.7% (n = 6)

Note. Table provides results for the enrollment evaluation survey. Question 4 was discarded.

Chart audits revealed that clinicians did not provide patients with educational material.

Appendix E

Subject Consent in Survey Research

Self-Administered Questionnaire Cover Letter (English)

The purpose of this survey is to assess your motivation for attending the diabetes self-management education class. You are being asked to fill out this survey because you are participating in class today.

The survey consists of 4 questions and will take approximately 10 minutes or less to complete. Filling out this survey has minimal risk. Risks include possible feelings of inconvenience and/or invasion of privacy. A benefit to be reasonably expected is a feeling of accomplishment because you are assisting the clinic to better serve and understand your healthcare needs.

If you have any questions about this survey please call the principle investigator Genevieve Talamantez at 210-995-1528 or feel free to ask questions at the time the survey is distributed. To contact the University of the Incarnate Word committee that reviews and approves research with human subjects, the Institutional Review Board (IRB), and ask any questions about your rights as a research participant, call: UIW IRB, Office of Research Development 210-805-3036.

Participation is voluntary and you have the right to refuse to participate without penalty of any kind. Your confidentiality will be maintained; no names or identifying data will be collected, each record will be assigned a number, and all data will be treated as group data.