

1-1-2018

Improving Care for Adult Clinic Patients with a History of Poor Glycemic Control

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Improving Care for Adult Clinic Patients with a History of Poor Glycemic Control

A Scholarly Project Presented to the Faculty of the School of Nursing
Boise State University

In partial fulfillment of the requirements
For the Degree of Doctor of Nursing Practice

By

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Abstract

Problem Description: Patients of one internal medicine clinic were found to have nearly twice the rate of diagnosed diabetes and poor glycemic control, when compared with national rates. Given this, certain aspects of the patient-provider dyad system, such as inadequate provider time, knowledge, and resources; may have contributed to the ability of some patients to adapt to a lifestyle with consistent diabetes self-care.

Intervention: An evidence-based diabetes protocol was developed, a diabetes self-management training (DSMT) curriculum was adapted to local context, and three cycles of patient-centered DSMT classes were delivered to provide individual and group-based support to participants. Completion of the DSMT series was expected to improve diabetes empowerment, performance of self-care behaviors, and A1C levels from baseline; and result in positive program satisfaction. Draft documents were also developed to fulfill accreditation standards toward application as a Diabetes Education Center, which would allow clinic providers to receive third-party reimbursement for DSMT services.

Results: During the pilot project, 16 patient referrals were received, 10 patients attended DSMT classes, and nine patients completed the 4-class series. Afterward, participants self-reported slightly increased diabetes empowerment and performance of self-care behaviors, and positive program satisfaction.

Interpretation: Upon conclusion of the pilot project, it was determined that poor glycemic control did not always indicate inability to adapt to a lifestyle with diabetes; and all participants benefitted from receiving DSMT. Three-month findings were somewhat comparable to the diabetes literature at 3 and 6 months, with differences most likely due to the short series duration and 1-week interval between some DSMT classes. Positive impact for participants involved receiving evidence-based support in diabetes self-management. At 3 months, 89% of participants self-

reported daily performance of SMBG and foot care; and available A1C results demonstrated reductions for 83% of participants. Positive impact for the clinic was demonstrated by the medical director stating that she would refer all of her patients with diabetes for DSMT.

Implications for policy development included the clinic becoming certified as a Diabetes Education Center, and third-party payers adequately reimbursing DSMT and reducing costs for copays and supplies for diabetes self-care.

Conclusions: Sustainability of the pilot project will be reached if the clinic becomes a Diabetes Education Center, assists other practices to pursue certification, and develops similar models to support patients with other chronic illnesses. Implications for further study include determining cost-effective methods to deliver DSMT classes that will result in long-term behavior change. Next steps include disseminating findings through the Boise State University Executive Session and ScholarWorks, researching smart phone apps to reinforce diabetes self-care, and starting a diabetes support group in the local area.

Keywords: diabetes, diabetes self-management training, Diabetes Education Center

Improving Care for Adult Clinic Patients with a History of Poor Glycemic Control

Introduction**Problem Description**

Type 2 diabetes (T2D) is often considered a *silent* disease, because it may be present for many years before diagnosis of an irreversible complication such as stroke, blindness, kidney or cardiovascular disease, or non-traumatic lower limb amputation. These complications can have a negative impact on the person's health, emotional well-being, and quality of life (QOL); and lead to permanent disability, loss of productivity, and absenteeism (American Diabetes Association [ADA], n.d.a; Carolan, Holman, & Ferrari, 2014; Hughes, Keith, Byars, & Wiginton, 2012). Prevention of diabetes complications requires the person to be fully responsible for their diabetes care by maintaining near-normal glucose levels. However, this requires a high degree of self-management that includes consistent performance of the seven self-care behaviors of healthy eating, being active, self-management of blood glucose (SMBG), taking medication, problem solving, reducing risks, and healthy coping (Powers et al., 2015).

Incorporating these behaviors into a person's life requires a significant adjustment, which can have a negative impact on the person's daily routine (Beverly et al., 2012; Nicolucci et al., 2013). Most studies exploring diabetes self-care use the phrases *lifestyle change* and *living with diabetes*, and many people are able to incorporate diabetes self-management behaviors into their lifestyle. However, there are some people who, despite having access to the same resources, are not able to adapt to a lifestyle that includes consistent performance of diabetes self-care. Several reasons for this inability have been described; which include disbelief that lifestyle changes would benefit the person, life and social stresses that influence glucose control, and inability to make lifestyle changes (Bhattacharya, 2012; Greenfield et al., 2011). Inconsistent performance of

diabetes self-care may result in poor diabetes control, which has been defined as a hemoglobin A1C higher than 9% (U. S. Department of Health and Human Services, 2012). Hemoglobin A1C (A1C) is a blood test that estimates blood glucose control over 2 to 3 months (ADA, n.d.b.)

When a person with diabetes is unable to adapt to this lifestyle, two levels of the healthcare service delivery system are thought to be involved. The patient's personal system may include being of younger age, obese, physically inactive, and of ethnic minority; and the personal factors of lower literacy, education level, and socioeconomic status; and lack of transportation (Crowley et al., 2014; Nam et al., 2014; TRIAD Study Group, 2010; Wallace, Carlson, Malone, Joyner, & DeWalt, 2010). Negative attitudes and beliefs about diabetes may also be barriers to self-care; such as misperceptions about the potential seriousness, fearing the progressive nature of the disease, and not making diabetes a priority. These attitudes and beliefs can lead to diabetes fatalism; which is characterized by feelings of fear, distress, self-blame, hopelessness, and depression (Beverly et al., 2012; Bhattacharya, 2012; Khan et al., 2011; Nam et al., 2011; Nicolucci et al., 2013; Stiffler, Cullen, & Luna, 2014; Stuckey et al., 2014; Walker et al., 2012).

Certain aspects of the provider-patient dyad system may also contribute to patients not adapting to a lifestyle with consistent diabetes self-care. For example, some providers believe that patients do not understand or care about the consequences of poor glycemic control; which may lead to a negative provider attitude toward treatment efficacy (Greenfield et al., 2011). This may result in poor provider-patient communication exacerbated by the provider's inadequate time, knowledge, and resources; which may further impact patient adherence to diabetes treatment (Nam et al., 2011; Peyrot et al., 2005; TRIAD Study Group, 2010).

At the local level, the DNP student ran a diabetes registry through the electronic health record (EHR) of one internal medicine clinic; and found that 14.4% of the clinic's patients had

been diagnosed with diabetes, which was twice as high as the national rate of 6.9% (Centers for Disease Control and Prevention [CDC], n.d.). For 20% of these patients (n=144), A1C levels were between 8.1 and 12.6; which was nearly twice as high as the national rate of 12.7% (National Center for Health Statistics, 2010). Given this, it appeared possible that the current pharmacologic model used by clinic providers may have been ineffective in assisting many patients to adapt to a lifestyle with diabetes. This was reported by one key stakeholder who stated that, in her experience, SMBG performance and adherence to dietary guidelines were the most significant challenges faced by patients with poor glycemic control (S. Ghanapuram, personal communication, June 29, 2016). Difficulty adapting to dietary changes was also found in the diabetes literature regarding constant struggles with food and weight, having to eat differently than others, and high cost of a healthy diet (Beverly et al., 2012; Booth, Lowis, Dean, Hunter, & McKinley, 2013; Carolan et al., 2014; Peyrot et al., 2005).

Available Knowledge

To evaluate available knowledge, the databases of CINAHL, MEDLINE, and PsycINFO were searched using diabetes AND poor control; and diabetes AND chronic illness. From this search, 13 high-quality articles of individual and group-based self-management training (DSMT) interventions were selected, which included nine Level I randomized-controlled trials (RCTs) and one large systematic review (Poe & Costa, 2012). These articles represented 4395 adults with T2D duration of 5 to 17 years and mean A1Cs of 8.2 to 9.9%. Also reviewed were one Level IV position statement and two standards of diabetes care. These studies were summarized into an evidence table that was used to guide planning for the pilot project (Appendix A).

Some RCTs noted intervention group improvements that were not always sustained for programs that were group-, individual-, or family-based; structured or non-structured, and map- or

manual-based (Beverly et al., 2013; Keogh et al., 2011; Fisher et al., 2012; Naik et al., 2011; Polonsky et al., 2011; Tan et al., 2011; Weinger et al., 2011). For example, self-care practices improved at 3 months in one study; and diabetes knowledge and beliefs improved at 3 and 6 months in two studies (Keogh et al., 2011; Tan et al., 2011). Psychological measures improved at 6 and 12 months in two studies, and A1C levels improved at 3, 6, and 12 months in several studies (Keogh et al., 2011; Fisher et al., 2012; Naik et al., 2011; Polonsky et al., 2011; Weinger et al., 2011). However, self-efficacy improved at 3 months in one study, but returned to baseline at 12 months; and A1C levels improved at 3 months in another study, but were not sustained at 6 and 12 months (Beverly et al., 2013; Naik et al., 2011).

Other conflicting findings involved whether differences existed between outcomes for intervention and control groups for programs that were group- or individual-based, structured or non-structured; and map-, manual-, or telephone-based care management. For example, both groups of one study demonstrated improved diabetes knowledge at 6 months; and two studies observed improved A1C levels at 3, 6, and 12 months (Frosch et al., 2011; McMahon et al., 2012). In addition, several studies noted improved diabetes knowledge, self-care frequency, and psychological measures for both groups at 6 and 12 months (Beverly et al., 2013; McMahon et al., 2012; Polonsky et al., 2011; Weinger et al., 2011). Possible explanations for these inconsistencies include recommendations from several studies that patients struggling with diabetes self-care need ongoing, repeated education; and that patient engagement is a key factor in improved glycemic control, but this might not be related to mode of engagement (Beverly et al., 2013; Naik et al., 2011; McMahon et al., 2012).

The consistent element in these studies was structure in the intervention, outcome collection, and follow-up methods. From the systematic review, participation in a group-based

DSMT program was found to improve diabetes knowledge, finger stick blood glucose levels, self-management skills, self-efficacy, empowerment; and A1C levels at all time points from 6 months to 5 years. Recommendations included a structured, group-based program taught by a single educator, based on patient empowerment, and with a duration of 6 to 10 sessions and 12 hours to 10 months (Steinsbekk et al., 2012). The Level IV evidence recommended a patient-centered program based on empowerment that utilizes an evidence-based curriculum focused on informed decision-making and the seven self-care behaviors. In addition, the program should incorporate input from external stakeholders, develop individualized plans of on-going monitoring and support, and employ a healthcare improvement process to measure program effectiveness and identify ways for improvement (Cefalu et al., 2017; Haas et al., 2014; Powers et al., 2015).

Rationale

Health Empowerment is a middle-range nursing theory (Appendix B) that perceives human beings as integral with the environment, and describes a *person-environment process* as being influenced by contextual and relational factors. These combined factors create the condition of *health empowerment*, which involves knowing participation in change and lifestyle behaviors; and results in *health patterning*, which enhances power to achieve human potential for change (Shearer, 2004). Given this, Health Empowerment was chosen as the theoretical model for the DSMT classes; based on the assumption that it would help participants realize their innate ability to be the primary decision-maker in their diabetes care, and empower them to achieve better glycemic control (Funnell & Anderson, 2004). Patient empowerment is frequently used in DSMT programs, and the ADA considers it to be the most effective approach for assisting individuals with diabetes to make informed self-management decisions (Cefalu et al., 2017).

This pilot project was part of a larger initiative for the clinic to become certified as a Diabetes Education Center, and thus eligible to receive third-party reimbursement for diabetes education and support. The certification process of the American Academy of Diabetes Educators (AADE) was selected based on the experience of one key stakeholder, so the AADE application checklist was incorporated into the Logic Model framework (Appendices C & D; AADE, n.d.; W. K. Kellogg Foundation, 2004). This resulted in 10 framework levels that involved: 1) formation of advisory, work, and internal listening groups; 2) development of an ADA-based protocol and AADE-approved DSMT curriculum; 3) delivery of DSMT sessions; 4) evaluation of participants meeting short-term goals; 5) and development of a Continuous Quality Improvement (CQI) process to ensure delivery of quality care for patients with a history of poor glycemic control. This framework was utilized to formulate the quality improvement methodology for the pilot project through the description of resources, activities, outputs, short-term and long-term outcomes, and impact.

Specific Aims

This report provides a detailed description of the planning, implementation, and evaluation of a system change for one rural internal medicine clinic. Three specific aims were accomplished through this pilot project: 1) implementation of a healthcare improvement project that encouraged providers to deliver evidence-based diabetes care; 2) provision of evidence-based diabetes education and support to empower patients to adapt their lifestyle to one that includes consistent performance of diabetes self-care; and 3) to assist the clinic toward certification as a Diabetes Education Center.

Achievement of these aims was determined by evaluating process questions about the number of clinic patients who were referred for classes within 1 week of identified need,

participated in and completed the DSMT series, and self-reported demographics and ways to improve the DSMT sessions. In addition, results-focused questions involved how many DSMT participants reported increased diabetes empowerment and performance of daily self-care activities, and receipt of annual eye and foot exams; demonstrated reductions in A1C levels, and received individualized follow-up plans that were documented in the EHR.

Methods

Context

Lincoln is a rural city located north of Sacramento, California, with an estimated 2010 population of 42,781; which included a retirement community of nearly 11,000 senior adults (United States Census Bureau, n.d.). Lincoln contains several Farmers Markets, swimming pools, and fitness trails to support a healthy lifestyle (Visit Placer, 2016). The site of the pilot project was an internal medicine clinic staffed by two physicians, a Nurse Practitioner, two medical assistants, and an office manager. As described in the project timeline (Appendix E), a needs assessment was conducted during early meetings to explore preferred learning methods and previous experience and readiness for change. A strengths, weaknesses, opportunities, and threats analysis was also performed, which identified the strengths of provider motivation to deliver evidence-based diabetes care, support from key stakeholders, and availability of evidence-based resources. In addition, weaknesses were identified as busy providers and staff, limited clinic space for DSMT classes, and possibility of small number of participants willing to attend DSMT sessions (McMillan & Perron, 2013; White & Zaccagnini, 2014). Clinic resources included sufficient space and equipment for meetings, patient contact, and EHR documentation.

Stakeholders included clinic providers, staff, and patients; as well as local representatives of a support agency for senior adults, an independent pharmacy, and a global pharmaceutical

company. From these stakeholders, an advisory group was formed to support the clinic through AADE certification; and a small work group was formed to develop project work flow and process for DSMT referrals. A small internal listening group (ILG) also met to provide insight into living with diabetes, and feedback on the DSMT curriculum and community room of a local supermarket (Shneyder, 2013). From these groups, a *sense of urgency* was established regarding diabetes as a disease. Resources for the pilot project included available evidence; stakeholder knowledge, skills, and time; and in-kind donations of salaries and project funds. After signing a Memorandum of Understanding (Appendix F), permission was obtained from the clinic medical director to run a diabetes registry through the EHR. This search identified 144 patients with diabetes, and resulted in the collection of demographic data for 29 patients with A1C levels of 8.0% or higher (Appendix G).

Intervention

The planning phase for the pilot project (Appendix E) began with a milestone luncheon with providers and staff; and an advisory group meeting to develop project goals, objectives, and scope of practice. This phase included two work group meetings to develop project work structure and process for DSMT referrals, and regular communication occurred in person or by email between the DNP student and key stakeholders.

The implementation phase (Appendix E) began and ended with milestone luncheons. During this time, the DNP student was responsible for: 1) developing draft documents for the AADE accreditation standards, an evidence-based diabetes protocol, and a list of community resources (Appendices C, H, & I, respectively); 2) posting informational flyers in the clinic and community (Appendix J); 3) adapting an evidence-based curriculum to fit local context (Appendix K); 4) teaching structured DSMT classes over 4 to 8 weeks that focused on

cognitive strategies and patient empowerment; 5) EMR documentation of DSMT class attendance and follow-up calls (Appendix L); 6) writing a 3-part diabetes column for the Lincoln newspaper (Appendix M); 7) data analysis; and 8) sustainability planning.

During the implementation phase (Appendix E), clinic providers referred patients by placing demographic sheets in a folder at the front desk for patients with A1C levels of 8.0% or higher or desiring support with diabetes care; and the DNP student made bi-weekly visits to obtain new referrals and contact these patients. Two work group meetings were held for insulin pen training and to evaluate the referrals process; and regular communication occurred in person or by email between the DNP student and key stakeholders. The implementation phase concluded with final meetings of the advisory and work groups. Throughout the pilot project, the DNP student was cognizant of time constraints for key stakeholders. For example, meetings were held on-site during lunch, Google Docs was used to disseminate documents, and group-based classes were offered weekly or bi-weekly during daytime and evening hours, as well as in the home for two patients.

The sustainability phase (Appendix E) included the development of diabetes teaching packets (Appendix N); and ongoing discussion of plans to develop a CQI group to work closely with a program coordinator, who will be hired in 2018. Sustainability will be reached if the clinic is able to achieve accreditation as a Diabetes Education Center. In summary, effectiveness of the pilot project and sustainability phase was determined by evaluating the short-term outcomes described in the Logic Model project framework (Appendix D).

1. c. During post-project meeting, at least 4 advisory group members complete adapted stakeholder survey (Appendix O).
2. b. During post-project meeting, at least 2 work group members complete adapted stakeholder survey (Appendix O).

3. c. By November 1, 2017, Program Coordinator completes 15 hours of continuing education in diabetes management.
4. a. By May 1, 2018, clinic completes all 23 required elements for certification as Certified Diabetes Education Center (Appendix C).
5. a. By May 1, 2017, patient-centered, written DSMT curriculum adapted to local context; and distributed to advisory and work group members (Appendix K).
b. By May 1, 2017, formalized, written list of diabetes self-management support services developed for distribution to advisory group and clinic staff (Appendix I).
6. b. By December 1, 2017, DSMT referrals made within 1 week; and diabetes protocol used for 90% of patients with history of poor glycemic control (Appendix H).
7. b. By November 1, 2017, 80% of participants attend at least 3 DSMT sessions; and self-report demographics, increased diabetes empowerment and performance of self-care activities for at least 5 out of last 7 days, and positive program satisfaction (Appendices P, Q, R, & S, respectively).
8. b. By November 1, 2017, 85% of DSMT participants receive written follow-up plan of diabetes self-management support that is documented in EHR (Appendix L).
9. a. By November 1, 2017, 75% of participants, upon DSMT completion, report daily performance of SMBG and foot care; and demonstrate A1C reductions of 0.5 to 1.0% from baseline (Appendix T).
10. a. By May 1, 2018, CQI program demonstrates 80% of DSMT participants receive follow-up, and annual eye and foot exams; and demonstrate A1C reduction.

Timeline

The pilot project occurred between July 2016 and March 2018 (Appendix E). This included a needs assessment between July and December 2016, planning phase between January and April 2017, implementation phase between May and October 2017, sustainability phase between October 2017 and March 2018, and dissemination of findings in March and April 2018. Winter rains resulted in a 1-month delay in planning meetings, which caused a 1-month delay in DSMT cycles that extended into mid-October 2017. Frequent visits to the clinic by the DNP student allowed for monthly work group meetings to be reduced to four formal meetings during the planning and implementation phases, and three informal meetings during milestone lunches.

Measures

Data collection in the field was used to gather data from key stakeholders and participants through meeting minutes, tracking of DSMT referrals and attendance, and agency records (Appendix U; Nightingale & Rossman, 2015). To increase transparency and understanding, a stakeholder survey from the public domain was adapted and administered during post-project meetings of the advisory and work groups (Outcomes 1. c. & 2. b.; Appendices O & U; Idaho Department of Water Quality, 2010). Summaries of these data sources were uploaded into Google Docs for review by advisory and work group members to solicit input and document project evolution.

During the first DSMT session, the DNP student administered three surveys to participants that included a demographic survey adapted from the public domain (Steinsbekk et al., 2012); and the Diabetes Empowerment Scale-Short Form[®] (DES-SF) and Summary of Diabetes Self-Care Activities Questionnaire[®] (SDSCA), after obtaining permission from the researchers (Outcome 7. b.; Appendices P, Q, R, S, & U, respectively). The DES-SF[®] is a 28-item instrument that measures dissatisfaction with diabetes self-care, readiness for change, and the ability to manage psychosocial aspects of diabetes to achieve self-care goals. This tool is widely utilized in diabetes research; and demonstrates strong validity, reliability, and an overall Cronbach's alpha rating of 0.84 (Anderson, Fitzgerald, Gruppen, Funnell, & Oh, 2003). The SDSCA[®] includes questions about diet, physical activity, blood sugar testing, foot care, and smoking; and asks how many times in the past 7 days diabetes self-care was performed. This tool is widely used in diabetes research, and demonstrates strong validity and reliability (Toobert, Hampson, & Glasgow, 2000). During the fourth session, the DES-SF[®] and SDSCA[®] were re-administered, and participants completed a satisfaction survey adapted with permission (Appendix S; Renda, Baernholdt, &

Becker, 2016). Results from these surveys were collected by the DNP student, synthesized, and uploaded into Google Docs for review by advisory and work group members.

Total revenues for the pilot project were estimated at \$12,183, which included in-kind donations of salary and benefits and project revenues from the DNP student (Appendix V). Expenses for the pilot project were estimated at \$1414; which included printing, refreshments, appreciation gifts, teaching supplies, communications, and transportation. When combined, these revenues and expenses resulted in an in-kind operating income of \$10,769; and an actual operating income of \$0. Cost savings resulted from: 1) existing clinic space and EHR system; 2) printing discount from the DNP student's employer; 3) availability of local community room, rather than renting a room from the public library; and 4) advertising through writing a 3-part diabetes column for local newspaper, rather than paid advertising through Sun City Lincoln Hills.

Analysis

Performance measurement was utilized as the project evaluation method, because of its ability to assess program outcomes and ways to improve the pilot project. Benefits of this method include enhanced decision making, improved program performance, and receipt of feedback on program results (Newcomer, Hatry, & Wholly, 2015). The primary goal of this evaluation was to add value to the system, without disrupting workflow through ongoing data collection by direct observation, participant surveys, and agency records (Poister, 2015).

Quantitative data analysis methods were used primarily, but qualitative data were collected when possible (Appendix W). For example, descriptive statistics of frequency and percentage were determined for DSMT referrals made within 1 week; and participant completion of the 4-class series and surveys of demographics, DES-SF[®], and SDSCA[®] (Outcomes 6. b. & 7. b.). Appropriate frequency, percentage, range, and mean and median responses were also

calculated to yield the best measure of central tendency for the demographic, DES-SF[®], and SDSCA[®] surveys (Outcome 7. b.; Appendices X, Y, Z, & AA, respectively; Sylvia, 2014a). In addition, frequency, percentage, and median responses were calculated as appropriate for results of the advisory and work group surveys (Outcomes 1. c. & 2. b.; Appendix BB). Qualitative data was obtained from participant and stakeholder surveys of ways that the pilot project could be improved (Outcomes 1. c., 2. b, & 7. b.; Appendices AA & BB). From 3-month follow-up calls, frequency and percentages were calculated for participant self-reports of daily performance of SMBG and foot care. In addition, range, percentage, percentage difference, and mean A1C values for participants were compared to baseline (Outcome 9. a.; Appendix T).

Ethical Considerations

In February 2017, an application for expedited review was submitted to the Institutional Review Board at Boise State University; and approval was received in March 2017 (Appendix CC). Three ethical principles were supported by this review; which included justice through posting informational flyers in clinic exam rooms (Appendix J), respect for persons through voluntary participation, and beneficence by minimizing risk of harm through the voluntary sharing of information during DSMT sessions. In addition, the pilot project was free of conflict of interest, because the DNP student was not employed by the clinic. Participant confidentiality was maintained through written consent, EHR password protection, and upholding of all federal and state HIPAA guidelines. Participant identity was protected by aggregating findings from the ILG and surveys of the advisory and work groups, numerically coding DSMT surveys, and keeping the key in a separate, secured location.

Selection bias resulted from convenience sampling of patients with diabetes who were willing to participate; but this method was supported in the diabetes literature, because of the pilot

project's purpose of improving care for persons with a history of poor glycemic control (Newcomer & Triplett, 2015). Attrition bias was minimized by having participants select content order for the DSMT sessions (Appendix K); and investigator bias was controlled by utilizing a patient-centered curriculum, encouraging group participation, and co-developing individualized diabetes self-management plans (Appendix L). Threats to quality were minimized by validating findings of the ILG through group discussion, consistency in data collection and analysis by the DNP student; and validity in the data collection procedures, such as construct and internal validity by the DES-SF[®] and SDSCA[®] being used extensively in diabetes research (Appendices Q & R; Anderson et al, 2000; Hatry, 2015; Toobert et al., 2000).

Results

Between May and August 2017, 16 referrals were received from clinic providers within 1 week of identified need. Ten patients attended DSMT classes in group-based (n=8) and home settings (n=2); and nine patients completed the 4-class series. Demographic data (N=10) included mean age of 58.4 years (range 34 to 79 years); 6.3 years since diabetes diagnosis (range 0.02 to 25 years); A1C 7.9% (range 6.0 to 12.0%); and 14.3 years of education (range 12 to 16 years). Eighty percent of participants were female (n=8) and 20% were male (n=2); 70% were married (n=7) and 30% were divorced (n=3) (Outcome 7. b.; Appendix X). Employment status included 40% full time (n=4), 40% retired (n=4), and 20% disabled (n=2); and ethnicity involved 10% Asian (n=1), 10% Hispanic (n=1), and 80% Caucasian (n=8). In addition, 90% of participants were taking oral medications (n=9), 40% were taking injectable medications (n=4), and 30% were taking medications by oral and injectable routes (n=3). Missing data occurred for one participant who completed pretests during the first class, but did not return for further classes or complete post-tests. After determining that these missing values would not affect project outcomes, nine

completed data sets were utilized to calculate outcomes for the pilot project (Appendix W; Sylvia, 2014b). Results of process measures for the nine participants who completed the DSMT series are displayed in data tables (Appendices X, Y, Z, & AA, respectively).

Results from the DES-SF[®] (Outcome 7. b.; Appendix Y) indicated that the mean diabetes empowerment score for DSMT participants (N=9) was 4.2 for the pretest (range 3.3 to 4.7). For the post-test, the mean score increased slightly to 4.3 (range 3.5 to 5.0). In summary, DES-SF[®] scores decreased by 0.9 for one participant, remained the same for two participants, and increased slightly for six participants (range 0.1 to 0.7). Category scores that demonstrated a slightly increased median included knowledge of areas of dissatisfaction with diabetes self-care, positive coping, staying motivated, and making the right diabetes care choices (Anderson et al., 2003).

Results from the SDSCA[®] pretest (Outcome 7. b.; Appendix Z) indicated that for the nine DSMT participants: 56% (n=5) ate a healthy diet, 22% (n=2) participated in at least 30 minutes of physical activity, 44% (n=4) tested their blood sugar, and 22% (n=2) checked their feet for at least 5 out of the last 7 days. After completing the 4-class series, the percentage of participants (N=9) who consistently performed these self-care behaviors remained the same for all categories; except for blood sugar testing, which increased to 56% of participants (n=5). However, increased frequency of self-care behaviors was noted for healthy diet (n=6), physical activity (n=4), blood sugar testing (n=3), and foot care (n=3). All participants (N=9) denied smoking on the pretest, which remained consistent on the post-test (Toobert, Hampson, & Glasgow, 2000).

Results from participant surveys indicated that the median response of 5, which represented the highest level of agreement, occurred for all measures (Outcome 7. b.; Appendix AA; Renda, Baernholdt, & Becker, 2016). All participants (N=9) reported that the instructor was professional and courteous, teaching was effective, and would highly recommend training

sessions. Eight participants (89%) responded that the session pace was appropriate, sessions lived up to expectations; and session content was relevant and increased awareness of how to live a healthier life with diabetes. In addition, 78% of participants (n=7) indicated that the location was comfortable; and in-class activities stimulated learning. Recommendations to improve the DSMT sessions included: 1) spending more time on meals and carbs; 2) ensuring that personal medical information is kept private; and 3) sessions were enjoyable, informative, valuable, and very helpful. The least valuable aspect of the training was reported as carb counting for one participant, who had lived with diabetes for 25 years.

Results from stakeholder surveys (Outcomes 1. c. & 2. b.; Appendix BB) indicated that group members (N=5) were involved in the project due to an interest in diabetes care, or that the project might impact the organization. In addition, 94% of responses suggested that stakeholders were satisfied or very satisfied with all components of the project; and 100% (N=5) reported that the project was very successful in accomplishing the intended mission and objectives. Sources of information for providing evidence-based diabetes care were described as the American Diabetes Association, clinic providers, diabetes teaching booklets, and patient information. Based on stakeholder feedback, the major unmet need in providing diabetes care was reported as introduction to diabetes and daily lifestyle, nutrition/diet plan, and patients not actively participating in diabetes classes. Patient compliance was reported by one stakeholder as being most important. To accomplish the clinic's mission of becoming a Diabetes Education Center, 60% of stakeholders (n=3) ranked as most important the tasks of drafting a plan, setting guidelines, and implementation and monitoring of the project.

Several project outcomes exceeded expectations (Appendix W), which included:

- 6. b. By December 1, 2017, 100% of DSMT referrals (N=16) made within 1 week;

- 7. b. By November 1, 100% of participants (N=10) self-reported demographics (Appendix X); and 90% (n=9) attended all four DSMT sessions;
- 8. b. By November 1, 2017, 100% of DSMT participants (N=9) received written follow-up plan of diabetes self-management support that is documented in EHR (Appendix L); and
- 9. a. By November 1, 2017, upon DSMT completion, 89% of participants (n=8) reported daily performance of SMBG and foot care (Appendix T).

Outcomes 1. c., 2. b., 5. a., and 7. b. were accomplished on time; and Outcome 5. b. was accomplished after a 2-month delay, but did not negatively impact DSMT participants (Appendices E & W). Fulfillment of the remaining outcomes is expected in 2018 (Appendix W), which will include:

- 3. c. Hiring of program coordinator and completion of required continuing education;
- 4. a. By May 1, 2018, clinic completes all 23 required elements for certification as Diabetes Education Center (Appendix C); and
- 10. a. By May 1, 2018, CQI program demonstrates 80% of DSMT participants receive follow-up, and annual eye and foot exams; and demonstrate A1C reductions.

Interactions between the outcomes, intervention, and contextual elements involved busy providers and staff, limited clinic space, and staff reductions that resulted in cost savings toward building a larger clinic. This created an increased workload for the office manager, but the DNP student was able to develop a closer working relationship with clinic staff. Another unintended consequences involved a new key stakeholder who was experienced in AADE certification. In addition, the DNP student was unable to gain access to an evidence-based diabetes protocol; but was able to develop a protocol based on available evidence (Appendix H). Cost savings resulted from several sources: 1) permission to utilize evidence-based resources for the DSMT curriculum (Outcome 5. a.; Appendices K & N; Novo Nordisk, n.d.); 2) discounted printing through the DNP student's employer; 3) use of a community room at the local supermarket; 4) Lyft service for one

DSMT participant who did not return after the first class; and 5) advertising by writing a 3-part diabetes column for the Lincoln newspaper (Appendix M).

Actual expenses for the pilot project were \$1518 (Appendix V). Half of the \$104 increase was due to printing costs; and the other half involved appreciation gifts, communications, and teaching supplies. Refreshment costs were \$46 less than the projected amount. Transportation costs remained constant at \$335; and in-kind donations of salary hours and benefits were not recalculated. A more detailed expense analysis estimated project expenses of \$2063 (Appendix DD); but these costs were reduced by not renting rooms for advisory group meetings or utilizing personnel time for data entry and DSMT follow-up. These projections were entered into the Year 1 column of the 3- to 5-year Budget Plan (Appendix EE), and the Year 2 operating income was estimated at \$1201. These expenses would be offset during Years 3 through 5 by Medicare reimbursement for DSMT sessions. When combined with the in-kind donations of salaries and benefits, the operating income for these years is expected to be \$849, \$434, and \$417, respectively.

Discussion

Summary

Although this pilot project involved a small sample (N=9), 67% of DSMT participants (n=7) demonstrated small improvements in DES-SF[®] scores, especially regarding diabetes knowledge, positive coping, staying motivated, and making right choices (Appendix Y). Small improvements were also noted for 44% of participants (n=4) on the SDSCA[®] measures of healthy diet, physical activity, blood glucose testing, and foot care (Appendix Z). This suggests that these DSMT participants demonstrated knowing participation in change and lifestyle behaviors, and that the rationale for utilizing the theory of Health Empowerment (Appendix B) was relevant to

the DSMT sessions. In addition, 89% of participants (n=8) self-reported the highest level of agreement on all items of the participant survey; and the most common suggestion for improvement was more discussion about healthy eating and carb counting (Appendix AA).

The rationale for using the Logic Model as the project framework (Appendix D) was relevant to the successful completion of outcomes (Appendices W). For example, during the planning and implementation phases, accomplishments included adaptation of an evidence-based DSMT curriculum to fit local context (Appendix K); development of a list of diabetes self-management community resources (Appendix I); 100% of DSMT referrals made within 1 week of identified need (N=16); and 90% of participants attending four DSMT sessions (N=10). In addition, 100% of participants (N=9) received individualized follow-up self-management plans, and reported positive program satisfaction (Appendices L & AA). Ninety-four percent of stakeholder responses (N=5) described being satisfied or very satisfied with all components of the project, and 100% of stakeholders reported that the project was successful in accomplishing the intended mission and objectives (Appendix BB). During the sustainability phase, a CQI program will need to be established to ensure that patients receive quality diabetes care; and all elements will need to be completed apply for certification as a Diabetes Education Center (Appendix C).

Relevance to the specific aims of the pilot project was demonstrated in the ability to plan, implement, and evaluate a fundamental system change to improve diabetes care for one rural internal medicine clinic. Specific aims that were accomplished included implementation of a healthcare improvement project that assisted providers to give evidence-based diabetes care, and delivery of evidence-based diabetes education and support to empower patients to adapt to a lifestyle that includes consistent performance of diabetes self-care. Discussion among stakeholder groups is ongoing regarding the role and time commitment of the proposed program coordinator.

Therefore, a third aim may be accomplished during the sustainability phase, if the clinic is able to apply for certification as a Diabetes Education Center.

Particular strengths of the pilot project occurred in three areas. For the clinic site, strengths included establishment of a *sense of urgency* about diabetes, and existing EHR and office space. Strengths from stakeholder involvement included access to evidence-based teaching materials (Appendices K & N), transportation services, and pharmaceutical support. Unanticipated benefits included use of the community room of a local supermarket and the opportunity to write a 3-part diabetes column (Appendix M), which was also published in two additional local newspapers. For the DSMT sessions, strengths included flexibility in scheduling, delivery method, and content order; and use of an interactive teaching method that encouraged participants to share experiences of living with diabetes. Further strengths involved the theoretical framework of Health Empowerment (Appendix B); project framework based on the AADE accreditation standards (Appendices C & D); and use of selected measures that were valid, reliable, and easy to administer and analyze (Appendices P, Q, R, & S, respectively). This pilot project of healthcare improvement was also delivered on time and only slightly over budget (Appendices E, V, and W, respectively); and the evaluation method of performance measurement (Appendix U) added value to the delivery of diabetes care without disrupting workflow for clinic staff.

Interpretation

The DSMT classes were patient centered, based on patient empowerment, and focused on the seven self-care behaviors and informed decision-making (Powers et al., 2015). Completion of the series was expected to result in improved diabetes empowerment, performance of self-care behaviors, and A1C levels from baseline; as well as positive program satisfaction. Findings from

participant surveys (N=10) included time since diagnosis of 1 week to 25 years, and baseline A1C levels of 8.0% or higher for 30% of participants (n=3). For participants who completed the DSMT series (N=9), 67% (n=6) demonstrated slight increases in diabetes empowerment scores, 53% (n=5) performed diabetes self-care behaviors for at least 5 out of the last 7 days, and 100% (N=9) reported positive program satisfaction (Outcome 7. b.). Based on participant demographics and in-class discussion, it was determined that having an A1C of 8.0% or higher was not always indicative of maladaptation to a lifestyle with diabetes; and that all DSMT participants benefitted from receiving DSMT (Appendices X, Z & AA, respectively).

Findings from the pilot project at 3 months were somewhat comparable to those from the diabetes literature at 3, 6, and 12 months (Appendix A). For example, after DSMT completion, slight improvements were noted in empowerment scores (Outcome 7. b.; Appendix Y; Steinsbekk et al., 2012); and self-care behaviors increased on some measures (Outcome 7. b.; Appendix Z; Beverly et al., 2013; Frosch et al., 2011; Keogh et al., 2011; Steinsbekk et al., 2012; Tan et al., 2011; Weinger et al., 2011). In addition, for A1C levels available at 3-month follow-up (N=6), improvements were noted for 83% of participants (n=5; Outcome 9. a.; Appendix T; Beverly et al., 2013; Fisher et al., 2012; Keogh et al., 2011; Naik et al., 2011; Polonsky et al., 2011; Steinsbekk et al., 2012; Tan et al., 2011). Reasons for the differences between pilot project outcomes and the diabetes literature are most likely due to short series duration and the 1-week interval between some DSMT classes (Appendix E; Beverly et al., 2013; Naik et al., 2011).

Positive impact for DSMT participants included receipt of evidence-based materials to manage diabetes self-care (Outcome 5. a.; Appendix K); and support from the DNP student and other participants. This was best demonstrated by one patient of the medical director, whose A1C reduced without insulin from 12.0 to 6.6% in 4 months. At 3-month follow-up (N=9), 89%

of participants (n=8) self-reported daily performance of SMBG and foot care; and 50% (n=3) of the available A1C levels (N=6) demonstrated reductions of at least 0.5 to 1.0% (range 0.1 to 5.3%), while the remaining 50% (n=3) continued to demonstrate glycemic control (Outcome 9. a.; Appendix T; Beverly et al., 2013). Positive impact for the clinic system was demonstrated through the medical director's report that after receiving positive feedback from participants, she now plans to recommend DSMT classes for all of her patients with diabetes (S. Ghanapuram, personal communication, September 11, 2017). In addition, eight of the 10 AADE standards (Appendix E) were completed in draft form by the DNP student.

Costs for the pilot project were relatively low, especially with the permission obtained to access diabetes teaching resources from the pharmaceutical company website (Appendix K). Additional opportunity costs involved: 1) utilizing existing clinic space and a local community room for luncheons and DSMT classes, rather than a rented room at the Lincoln Library; 2) using a Lyft service to transport one DSMT participant who did not return for additional classes; 3) writing a 3-part diabetes column for the LNM, rather than paying for advertising in the Sun City Lincoln Hills magazine; and 4) reduced costs for one key stakeholder in time generated for the clinic (Appendices V, DD, & EE, respectively).

Policy Implications

Policy implications for the pilot project involve advocating at the system level of the local clinic and the policy level of third party payers (Priest, 2016). At the system level, to apply for AADE certification as a Diabetes Education Center, an online application must be submitted with an \$800 fee and all supporting documents for the 10 accreditation standards (Appendix C; AADE, n.d.). Once the clinic becomes certified, the CQI group must meet quarterly to ensure that DSMT participants achieve improved clinical outcomes, health status, and quality of life

(Cefalu et al., 2017); and an annual report must be submitted to document CQI activities. Other annual requirements will include an advisory committee meeting; completion of 15 hours of appropriate continuing education credits for the program coordinator and diabetes educator; and submission of an annual status report (AADE, n.d.). These practices will create a continuous evidence cycle to demonstrate care coordination and improved access to high-quality care for clinic patients with diabetes (O'Grady, Mason, Outlaw, & Gardner, 2016).

A common barrier to providing DSMT is poor reimbursement by third party payers, and primary care practices often struggle to cover these costs. Therefore, at the policy level, DSMT should be adequately reimbursed to include referrals for patients living in rural and underserved areas, and persons diagnosed with pre-diabetes (Cefalu et al., 2017; Powers et al., 2015).

Reimbursement should also cover DSMT over a longer time frame that is ongoing, structured, and individualized to the learning needs of participants (Beverly et al., 2013; Fisher et al., 2012; Keogh et al., 2011; McMahon et al., 2012; Naik et al., 2013; Polonsky et al., 2011; Steinsbekk et al., 2012; Tan et al., 2011; Weinger et al., 2011). People with diabetes often experience high out-of-pocket costs, which may range from \$715 to \$1397 per year; but one RCT found that by providing diabetes knowledge and blood glucose supplies, DSMT participants demonstrated enhanced self-care and improved clinical outcomes (Li et al., 2014; Tan et al., 2011; Zhuo, Zhang, & Hoerger, 2013). Therefore, another policy implication involves the provision of DSMT and blood glucose monitoring supplies at no charge; and medication copays and out-of-pocket costs at reduced rates for persons with diabetes.

Limitations

Several limitations occurred throughout the pilot project, such as a low number of participants. This made it difficult to analyze project outcomes, as results may differ with a larger

number of participants (Sylvia, 2014a). Generalizability was limited due to homogeneity of DSMT participants regarding self-selection, gender, race and ethnicity, marital status, and years of education. In addition, patients seen in their homes might have received more support from the DNP student than patients who attended group-based sessions; but this was supported by one RCT that found contact time with the diabetes educator was the best predictor of improved glycemic control (Naik et al., 2011). Other limitations involved the possibility of being unable to track responses to follow-up plans for DSMT participants, and the inability to analyze patients with poorly-controlled diabetes who did not participate in the intervention. Internal validity could have been limited by: 1) selection bias from the use of convenience sampling; 2) response bias from the use of self-reported data on participant surveys; 3) measurement bias due to the pilot nature of the project; and 4) evaluation of participant perceptions of diabetes empowerment and performance of diabetes self-care behaviors (Poe & Costa, 2012). Attrition bias was minimal, with only one participant not completing the DSMT series (N=10).

Efforts to minimize these limitations involved the use of evidenced-based teaching materials (Appendix K), and delivery of an educational program that balanced structure with selection of content order by participants. In addition, DSMT classes were taught by one educator who performed all data collection and analysis to increase data accuracy. Bias was reduced through a 90% response rate (N=10); low level of missing data; and participants who were heterogeneous in age, employment status, years since diabetes diagnosis, and baseline A1C levels (Appendix X). The DES-SF[®] and SDSCA[®] instruments are also well published in peer-reviewed literature; and both measures have established reliability and validity ratings (Appendices Q & R, respectively; Anderson et al., 2000; Toobert et al., 2000).

Conclusions

The Improving Care for Patients with Diabetes project created significant opportunities to improve health outcomes for patients, providers, and staff of one internal medicine clinic. These opportunities included development of an evidence-based diabetes protocol, delivery of evidence-based DSMT, and positive project feedback from DSMT participants and key stakeholders. This feedback was instrumental in changing the referral practices of the medical director (S. Ghanapuram, personal communication, September 11, 2017); which would allow DSMT to be offered to all clinic patients with diabetes, once the program is expanded.

For the sustainability phase, four diabetes teaching packets were developed of materials utilized during DSMT sessions (Appendix N). These packets were categorized by: 1) first appointment for newly-diagnosed diabetes; 2) second and third appointments for newly-diagnosed diabetes, or for patients with A1C higher than 8.0%; and 3) newly-prescribed oral or injectable diabetes medications. These packets, as well as numerous individual tools, were placed in labeled hanging files in the medical assistant's desk drawer. Laminated copies of these teaching materials were disseminated to clinic providers and staff, so packets could be utilized during appointments.

Negotiations are in progress to offer additional DSMT classes in 2018; and during 3-month follow-up calls, DSMT participants confirmed interest in starting a diabetes support group in Lincoln later this year. At this time, the DNP student has completed accreditation documents through Standard 8 (Appendix C). These documents will need to be updated by the new program coordinator, once hired; and Standard 9 and 10 documents will need to be completed and submitted with the clinic's application, which is expected in 2018.

Sustainability for the pilot project will be reached if the clinic becomes certified as a Diabetes Education Center, and thus eligible for third-party reimbursement to provide evidence-

based diabetes education and support for their patients. Financial impact for the clinic was calculated based on the needs assessment findings of 144 patients with diabetes, minus the nine patients who attended DSMT classes; and the reimbursement rate of \$15.24 per 30-minute increment allowed by Medicare (Administration for Community Living, 2015), over a 4-hour cycle. This would result in reimbursement of \$122 per patient; and a total revenue for the clinic of \$16,470, if all patients were willing to participate. These costs would be offset by in-kind donations of salaries, benefits, and supplies; and were projected as operating incomes of \$849 (16 patients), \$434 (12 patients), and \$417 (12 patients) for Years 3 through 5 of the Scholarly Project Budget Plan (Appendix EE). Although these values are not significant, it is believed that based on the strong support of clinic providers, staff, and patients during the pilot project; these operating incomes would allow for the DSMT classes to be offered on an ongoing basis to maintain AADE certification. Benefits to the system would include stronger collaboration among the healthcare team, and development of a diabetes support network within the local area. If the clinic achieves accreditation, it would be the first private practice in the Sacramento area to do so; which might result in replication of the pilot project to other private practices within the region.

Suggested next steps include disseminating findings from the pilot project to the Boise State University Executive Session in March 2018 and the ScholarWorks database in April 2018. In addition, developing an EHR template to track diabetes self-management goals would be beneficial to clinic providers; and exploring smart phone apps to reinforce diabetes self-care would be beneficial to patients with diabetes. Implications for practice include developing similar models to provide education and support to help patients with other chronic diseases to consistently perform self-care behaviors that will improve their quality of life (Gomersall, Madill, & Summers, 2012).

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Appendix A

Evidence Summary Table

EBP Question: For adults with a history of poor glycemic control, will a combination of individual and group-based teaching sessions about diabetes self-care result in at least moderate diabetes empowerment, consistent performance of self-care behaviors, and sustained glucose control in most cases?

Date: January 10, 2018

Article #	Author & Date	Evidence Type	Sample, Sample Size & Setting	Study findings that help answer the EBP question	Limitations	Evidence Level & Quality
G-1	Beverly et al., 2013, <i>Diabetes Educator</i>	Randomized controlled trial	67 adults recruited from clinic practice, 75% White; mean age 59 years, 13 years since diagnosis, A1C 8.4%	Group map-based program vs group education on cholesterol & BP; modestly improved A1C levels at 3 months for intervention arm, but not maintained at 6 & 12 months; A1C not improved at any time for control group; both groups demonstrated improved frequency of self-care, diabetes-related distress / frustration / QOL over time; findings support notion that people struggling with diabetes self-care need ongoing & repeated education to help them improve & maintain diabetes control	Impact of only 1 program in reinforcing diabetes education; homogeneity of study sample; follow-up not built in; design didn't allow for intervention dose	1A
G-2	Naik et al., 2011, <i>Archives of Internal Medicine</i>	Randomized controlled trial	87 adults recruited from diabetes registry, 69% White; mean age 63.5 years, 5 years since diagnosis, A1C 8.8	4-session group clinic intervention using EPIC approach to self-management and medical care; clinically significant improvements in A1C achieved after 3-month & sustained at 1-year follow-up; contact time with diabetes educator best predictor of improvements in glycemic control; self-efficacy scores declined without booster sessions; results add to evidence supporting effectiveness of group clinics	Participant similarity and significant interaction time between participants and providers;	1A

Article #	Author & Date	Evidence Type	Sample, Sample Size & Setting	Study findings that help answer the EBP question	Limitations	Evidence Level & Quality
				in diabetes care and highlight importance of goal-setting and behavior change theories	decreased ability to generalize; pilot study; possible measurement error; decreased ability to track individual responses to intervention	
G-3	Steinsbekk et al., 2012, <i>BioMed Central Health Services Research</i>	Systematic review, 21 randomized controlled trials with meta-analysis	2833 adults, type 2 diabetes, baseline 60 years of age	<u>Best results</u> are single educator, less than 10 months, more than 12 hours, 6-10 sessions; group-based diabetes self-management education resulted in improved self-management skills, empowerment, and self-efficacy (6 months), significantly reduced A1C (6 months) and finger stick blood glucose (12 months), and significantly improved diabetes knowledge (6 and 12 months and 2 years)	Moderate quality; difficult to blind; similar participants from developed countries	1A
G-4	Weinger et al., 2011, <i>Archives of Internal Medicine</i>	Randomized controlled trial	222 adults recruited from clinic practice; 87% White; mean age 52.5 years, 17.2 years since diagnosis, A1C 8.9%	5-session, manual-based, instructor-led, structured group intervention with cognitive behavioral strategies; arm 1 = education-led, attention-control group education program; arm 2 = unlimited individualized nurse & dietary education sessions for 6 months; all groups improved A1C levels, but intervention group improved more than control arms at 3, 6, & 12 months; T2D participants improved more than T1D participants; QOL, glucose monitoring, & frequency of diabetes self-care did not differ by intervention over time; structured, cognitive behavioral program more efficient in improving glycemic control in adults with long-duration diabetes	No follow-up support, different locations for study arms; didn't address subclinical depression	1A

Article #	Author & Date	Evidence Type	Sample, Sample Size & Setting	Study findings that help answer the EBP question	Limitations	Evidence Level & Quality
I-1	Fisher et al., 2012, <i>Diabetes Research and Clinical Practice</i>	Randomized controlled trial	483 adults recruited from primary care practice across U.S.; 63% White; mean age 55.8 years, 7.6 years since diagnosis, A1C 8.9%	Structured testing group (STG) with enhanced usual care & at least quarterly use of structured self-monitoring of blood glucose (SMBG); significant increases in confidence in diabetes self-care for T2D scores over time (12 months); adherent STG patients displayed greater confidence in diabetes self-care for T2D (CIDS-T2) than active control group (ACG); diabetes-related autonomous motivation showed main & between-group differences; changes in CIDS-T2 related to A1C changes over time; CIDS-T2 & A1C displayed significant time-concordant relationship; findings suggest that structured SMBG helps to enhance patients' engagement with diabetes care through development of greater self-confidence in diabetes management & stronger belief in autonomous ability to manage diabetes, & that these positive attitudinal changes are significantly associated with improvements in glycemic control	No usual care or attention control group; mediated models tested with short, but well-validated measures; study lasted 12 months from baseline to final follow-up, but unsure how changes will be sustained over time	1A
I-2	Frosch et al., 2011, <i>Archives of Internal Medicine</i>	Randomized controlled trial	201 adults recruited from 3 primary care practices & 1 community-based clinic; 56% Latino; mean age 55.5 years, at least 10 years since diagnosis, A1C 9.6%	DVD, Living with Diabetes booklet, & up to 5 sessions of telephone coaching; overall decline in A1C (- 0.5%) from baseline to 6 months across both groups, but not significant for intervention group over time; significant increase in diabetes knowledge from baseline to 6 months for both groups, but not significant for intervention group over time; urgent need for effective interventions to decrease negative health effects and patient suffering; larger structured interventions may be necessary to overcome challenges faced by disadvantaged patients	Difficult to blind providers and research staff; more attrition in control group but didn't affect results	1A

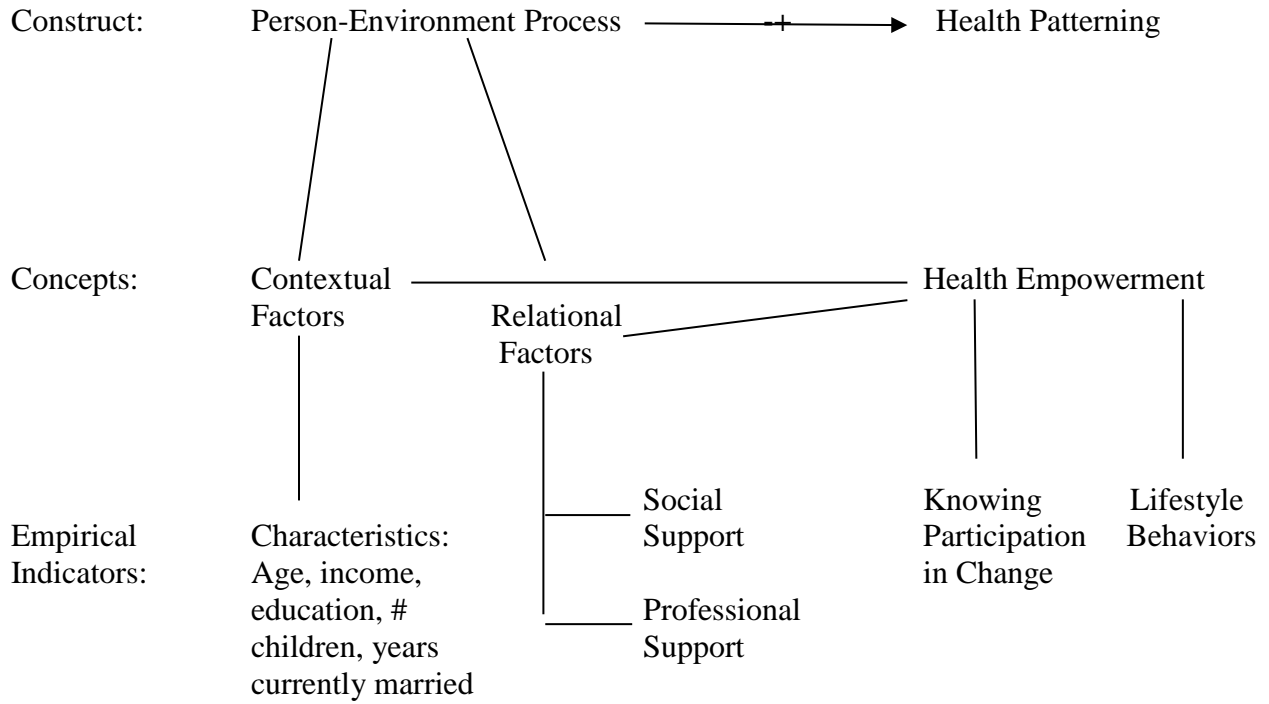
Article #	Author & Date	Evidence Type	Sample, Sample Size & Setting	Study findings that help answer the EBP question	Limitations	Evidence Level & Quality
I-3	Keogh et al., 2011, <i>American Journal of Managed Care</i>	Randomized controlled trial	121 adults recruited from specialist diabetes clinics at large suburban hospital; mean age 58.6 years, 9.4 years since diagnosis, A1C 9.2%	Psychological, family-based intervention with 2 sessions in home & 3 rd session as 15-minute follow-up phone call; at 6 months, intervention group demonstrated significantly lower A1C & statistically improved diabetes beliefs, psychological well-being, diet, exercise, & family support; home-based interventions may be more effective in reaching vulnerable populations, especially elderly; increased costs of home-based IVs needs to be balanced with effectiveness; targeting inaccurate &/or negative beliefs about poorly-controlled T2D in home setting & in presence of family member can change illness perceptions & improve glycemic control, self-management, psychological well-being, & family support	Didn't recruit most vulnerable; only analyzed change from PO meds to insulin; ideal follow-up 12+ months; no patient-only intervention arm; delivery of intervention challenging & time consuming	1A
I-4	McMahon et al., 2012, <i>Diabetes Technology & Therapeutics</i>	Randomized controlled trial	15 adults recruited by letter or brochure based on A1C results; 74% White; mean age 60.2 years, A1C 9.9%; 49% more than 10 years since diagnosis	Telephone-based care management group, online care management group, & usual care supplemented with Internet access & online self-management resources; A1C declined significantly & substantially in all groups over 12 months; rate of change not significantly different among groups; number of interactions with care providers not significantly associated with changes in A1C; BP, weight, lipids, & diabetes distress didn't differ among groups over time; patient engagement is key factor driving improved glucose control, and results indicate that improvement in diabetes care measures may be naïve of mode of engagement	Decreased generalizability due to higher education level, self-selection of online intervention, small sample size; system-wide A1C declines possibly due to Type 1 error	1A

Article #	Author & Date	Evidence Type	Sample, Sample Size & Setting	Study findings that help answer the EBP question	Limitations	Evidence Level & Quality
1-5	Polonsky et al., 2011, <i>Diabetes Care</i>	Randomized controlled trial	483 adults recruited from primary care practice across U.S.; 63% White; mean age 55.8 years, 7.6 years since diagnosis, A1C 8.9%	Structured testing group (STG) with enhanced usual care & at least quarterly use of structured self-monitoring of blood glucose (SMBG); significantly greater reductions in mean A1C in STG at 12 months; significantly more STG patients received treatment change recommendations at month 1 visit; both groups displayed significant improvements in general well-being; findings demonstrate that appropriate use of SMBG in poorly-controlled, insulin-naïve T2D patients can be efficacious & clinically meaningful	Did not include third study arm; did not determine how many treatment changes occurred or if clinically appropriate; more attention to STG patients over study period	1A
1-6	Tan et al., 2011, <i>Health Education Research</i>	Randomized controlled trial	164 adults recruited during routine clinic visits at government state hospital; 61% Malaysian; mean age 54 years, 11.3 years since diagnosis, A1C > 7.0%	Brief structured education program of monthly sessions over 12 weeks based on self-efficacy & glycemic control; at Week 12, significant correlation between A1C & medication adherence, total education time with SMBG practice, better medication adherence & knowledge improvement, SMBG with medication adherence & carbohydrate intake, & diabetes knowledge; structured education face-to-face intervention programme improved 3 self-care practices, diabetes knowledge, & glycemic control	Not blinded; long-term study not possible; adapted to be culturally appropriate; individual education program less time efficient; study participants not representative of total sample	1A

Article #	Author & Date	Evidence Type	Sample, Sample Size & Setting	Study findings that help answer the EBP question	Limitations	Evidence Level & Quality
IV-1	Cefalu et al., 2017, <i>Diabetes Care</i>	American Diabetes Association's Standards of Medical Care in Diabetes	N/A	Diabetes care concepts regarding care delivery systems, Chronic Care Model, National Diabetes Education Program, and tailoring treatment to vulnerable populations; classification and diagnosis of diabetes; foundations of care and complex medical evaluation; glycemic targets; obesity management for treatment of diabetes; approaches to glycemic control; cardiovascular risk management; microvascular complications and foot care; and older adults over the age of 65 years	Groups to which recommendations apply and to not apply stated as persons with diabetes, but implied as diabetes healthcare providers	4A
IV-2	Haas et al., 2014, <i>Diabetes Care</i>	National Standards for DSME/S	N/A	10 national standards of DSME/S = Internal structure; external input; access; designated coordinator; one or more instructors; written curriculum; individualization; ongoing support; patient progress; and quality improvement	Implied types of evidence and elimination of potential biases	4A
IV-3	Powers et al., 2015, <i>Journal of the Academy of Nutrition and Dietetics</i>	Joint position statement of American Diabetes Association, American Association of Diabetes Educators, and Academy of Nutrition and Dietetics	N/A	Benefits associated with diabetes self-management education and support (DSME/S); providing diabetes education and support; reimbursement, national standards, and referral; diabetes education algorithm; content for DSME/S at four critical time points; and overcoming barriers that limit access and receipt of DSME/S	Types of evidence implied as higher level of quality	4A

Appendix B

Theoretical Model of Health Empowerment



Appendix C

American Academy of Diabetes Educators Application Checklist

AADE DEAP Initial Application Supporting Documentation Check List**Standard 1:**

- DSME/T Organizational Chart including representation of Advisory Group
- Program Mission and Goals
- Letter of support from your sponsoring organization

Standard 2:

- Documented plan for seeking outside input Advisory Group Membership

Standard 3:

- Documentation identifying your population
- Documented allocation of resources to meet population specific needs. (E.g. room, materials, curriculum staff, support etc..)
- Identification of and actions taken to overcome access related problems as well as communication about these efforts to stakeholders (document in application)

Standard 4:

- Program Coordinator Job Description
- Program Coordinator Resume reflecting diabetes education experience
- Documentation that the Program Coordinator received a minimum of 15 hours of CE credits per year (program management, education, chronic disease care, behavior change) OR credential maintenance (CDE or BC-ADM)

Standard 5:

- Job Descriptions for all other Diabetes Education staff (instructors, dietician, community health workers)
- Current credential for instructor(s) (including licensure and/or registration proof)
- Instructor's resume is current and reflects their diabetes education experience Proof of Licensure for all other diabetes education staff
- Proof of Continuing Education credits related to diabetes for diabetes educators from the past 12 months
- There is documentation of successful completion of a standardized training program for CHWs (Training includes scope of practice relative to role in DSME)
- Documentation that the CHWs are supervised by, the named diabetes educator(s) in the program
- Policy that identifies a mechanism for ensuring participant needs are met if needs are outside of instructor's scope of practice and expertise

Standard 6:

- One section or outline of your written curriculum demonstrating integration of AADE7 Self-Care Behaviors. If you are using a pre-published curriculum, you need only include a copy of the cover page.

Standard 7:

- Education Process Policy from referral to follow up
- De-identified Patient Chart of a real patient that went through the DSME/T program from referral to follow up (See record Review to ensure all components are met)

Standard 8:

- See record review this is incorporated into the de-identified patient chart

Standard 9:

- See record review this is incorporated into the de-identified patient chart

Standard 10:

- Evidence of aggregate data collected and used for analysis of both behavioral and clinical outcomes is clearly identified at time of application (Table is in the application or you may submit separately).

Appendix D

Logic Model Project Framework

Resources/Inputs	Activities	Outputs	Outcomes: Short term	Outcomes: Long term	Impact
Includes the human, financial, organizational, and community resources a program has available to direct toward the work.	Includes the processes, tools, events, technology, and actions that are intended to bring changes or results.	Direct products of program activities and may include types, levels and targets of services to be delivered by the program.	Specific changes in program. SMART. Attainable in 1-3 years.	Specific changes in program. SMART. Attainable in 4-6 years.	Fundamental intended or unintended change occurring as a result of program activities in 7-10 years.
1. Time, knowledge, and skills of DNP student, Project Sponsor, and advisory group; rented room, and existing technology and equipment.	1. Conduct meetings of advisory group of clinic providers and external stakeholders that includes local diabetes experts, community partners, and select patients with diabetes; develop clearly-worded organizational structure, mission statement, and goals.	1. Advisory group and clinic providers have clear understanding of procedures and requirements for becoming Certified Diabetes Education Center.	1. a. Advisory group meets pre- and post-project, and annually thereafter. b. By May 1, 2017, formalized, written documents of project structure, mission statement, and goals developed and distributed to advisory group and clinic staff. c. During post-project meeting, at least 4 advisory group members complete informal survey regarding perceptions of value / quality of program services for patients with history of poor glycemic control.	1. Advisory group meets annually to contribute toward Continuous Quality Improvement (CQI) program and annual requirements to maintain Certified Diabetes Education Center status.	1. Strong community partnerships that support clinic vision and values of providing quality care to patients with diabetes.
2. Time, knowledge, and skills of DNP student, Project Sponsor, and clinic staff; milestone luncheons, and existing room, technology, and equipment.	2. Conduct meetings of clinic work group to develop project work structure, advertising strategy, and processes for diabetes self-management training (DSMT) referrals and follow-up.	2. Collaborative work group with shared mission and goals, and clear understanding of project work structure.	2. a. Work group meets pre- and post-project, and monthly during planning phase. b. By May 1, 2017, formalized, written documents of project work structure, advertising strategy, and processes for DSMT referrals and follow-up distributed to advisory group and clinic staff.	2. N/A (CDC, n.d.)	2. Increased staff buy-in and job satisfaction through contribution to quality care for clinic patients with diabetes.

			c. During post-project meeting, at least 2 work group members complete informal survey regarding perceptions of value / quality of program services for patients with history of poor glycemic control.		
3. Time, knowledge, and skills of DNP student, Project Sponsor, clinic staff, and advisory group; and existing technology and equipment.	3. Designate Program Coordinator to oversee planning, implementation, and evaluation of diabetes self-management training (DSMT) sessions; Program Coordinator to complete 15 hours of continuing education in diabetes management annually (AADE, n.d.).	3. Clearly-defined role and expertise of Program Coordinator will enhance communication and working relations of healthcare team.	3. a. By May 1, 2017, clearly-written job description developed for Program Coordinator position. b. By August 1, 2017, Program Coordinator named. c. By November 1, 2017, Program Coordinator completes 15 hours of continuing education in diabetes management.	3. N/A (S. Ahten, personal communication, June 1, 2016)	3. Program Coordinator demonstrates clarity and accountability of communication, program direction, and decision-making to ensure effective delivery of education and support for clinic patients with diabetes.
4. Time and knowledge of DNP student, Project Sponsor, and advisory group; and existing knowledge and equipment.	4. DSMT instructor and Project Sponsor, as RNs experienced in diabetes education and care, complete 15 hours of continuing education in diabetes management annually (AADE, n.d.).	4. Enhanced project effectiveness, and current knowledge base for Project Sponsor and DSMT instructor(s).	4. a. By May 1, 2018, clinic completes required elements for certification as Certified Diabetes Education Center. b. By November 1, 2018, clinic achieves status as Certified Diabetes Education Center.	4. Clinic fulfills annual requirements to maintain Certified Diabetes Education Center status.	4. Clinic is part of local provider network that delivers quality diabetes care, education, and support to community.
5. Time, knowledge, and skills of DNP student, Project Sponsor / Program Coordinator, clinic staff, internal listening group, and community partners; project funds, reserved room, appreciation gifts; and existing research, DSMT curriculum, technology, and equipment.	5. Identify target population, educational preferences for DSMT sessions, and community resources for ongoing diabetes self-management support (AADE, n.d.).	5. Clear description of target population and preferences for DSMT education; and current list of diabetes self-management support services.	5. a. By May 1, 2017, patient-centered, written DSMT curriculum adapted to local context and distributed to advisory group and work group members. b. By May 1, 2017, formalized, written list of diabetes self-management support services developed	5. a. DSMT curriculum updated each year to reflect current ADA Standards of Care (Cefalu et al., 2017). b. List of support services updated semi-annually to reflect current availability.	5. Strengthened relationships between clinic staff and patients with diabetes; improved diabetes self-management for clinic patients; and 90% positive patient satisfaction scores for 5 years (W. K. Kellogg, Foundation, 2004).

			for distribution to advisory group and clinic staff.		
6. Time, knowledge, and skills of DNP student, Project Sponsor / Program Coordinator, clinic staff, community partners, and local media; project funds, printing costs, training materials; and existing research, DSMT curriculum, facilities, technology, and equipment.	6. Identify and adapt to local context ADA-based clinic protocol and written AADE DSMT curriculum; educate clinic staff on diabetes basics and train on processes for referral and follow-up; and publicize with local media and posting of informational flyers in community.	6. Evidence-based clinic diabetes protocol, DSMT curriculum, and participant teaching packets; staff knowledgeable in diabetes basics and provision of timely referrals and patient-centered diabetes care; and diabetes education services advertised to local community.	6. a. By June 1, 2017, clinic diabetes protocol utilized for 80% of patients with history of poor glycemic control, and DSMT referrals made within 2 weeks. b. By December 1, 2017, clinic diabetes protocol utilized for 90% of patients with history of poor glycemic control; and DSMT referrals made within 1 week.	6. a. Clinic diabetes protocol updated annually to reflect current ADA Standards of Care (Cefalu, 2017). b. By June 1, 2020, clinic diabetes protocol utilized for 95% of patients meeting criteria; and DSMT referrals made within 3 business days.	6. Clinic patients with diabetes perform at least once daily self-blood glucose monitoring (SGBM); and receive bi-annual measurement of A1C and annual eye, dental, and foot exams (Healthy People 2020).
7. Time, knowledge, and skills of DNP student, Project Sponsor / Program Coordinator, and DSMT participants; project funds, reserved room, refreshments, printing costs of DSMT materials and outcome measures, and existing technology and equipment.	7. From EHR records or during clinic appointments, identify potential DSMT participants who have recently been seen in the ED or had an overnight hospital stay for a diabetes complication, or demonstrate an A1C level of 8.0% or higher; invite patients to participate during clinic appointment or by telephone following receipt of referral; and deliver patient-centered DSMT sessions that focus on behavior change for participants.	7. Administration of patient-centered DSMT curriculum to clinic patients with poor glycemic control that will empower them to self-manage their diabetes care to obtain glycemic control.	7. a. By August 1, 2017, 75% of participants attend at least 3 DSMT sessions; and self-report demographics, increased diabetes empowerment, performance of self-care activities for at least 5 out of the last 7 days, and positive program satisfaction. b. By November 1, 2017, 80% of participants attend at least 3 DSMT sessions; and self-report demographics, increased diabetes empowerment performance of self-care activities for at least 5 out of the last 7 days, and positive program satisfaction.	7. By June 1, 2020, 90% of clinic patients with diabetes demonstrate A1C levels below 9.0 (Healthy People 2020).	7. a. Clinic patients with diabetes demonstrate A1C levels below 8.0. b. At least 62.5% of local community residents receive formal diabetes education (Healthy People 2020).
8. Time, knowledge, and skills of DNP student, Project Sponsor / Program Coordinator, clinic staff,	8. Develop individualized follow-up plan with DSMT participants for ongoing self-management support;	8. Individualized patient follow-up plan for self-management support that is	8. a. By August 1, 2017, 75% of participants, upon completion of DSMT sessions, receive written	8. By June 1, 2020, 95% of participants, upon completion of DSMT sessions, receive written	8. Through utilization of self-management support, clinic patients with diabetes

<p>participants, and community partners; and existing technology and equipment.</p>	<p>and communicate patient outcomes, goals, and plan to healthcare team (AADE, n.d.).</p>	<p>clearly communicated to healthcare team.</p>	<p>follow-up plan for self-management support that is documented in clinic EHR. b. By November 1, 2017, 85% of participants, upon completion of DSMT sessions, receive written follow-up plan for self-management support that is documented in clinic EHR.</p>	<p>follow-up plan for self-management support that is documented in clinic EHR.</p>	<p>internalize behavior changes necessary to consistently perform diabetes self-care.</p>
<p>9. Time, knowledge, and skills of DNP student, Project Sponsor / Program Coordinator, and clinic staff; and existing technology and equipment.</p>	<p>9. To evaluate effectiveness of DSMT program, monitor whether participants achieve personal diabetes self-management goals (AADE, n.d.).</p>	<p>9. Improved knowledge of healthcare team regarding effectiveness of DSMT program and clinic patients' self-management of diabetes.</p>	<p>9. a. By November 1, 2017, 75% of participants, upon completion of DSMT sessions, report daily performance of SMBG and foot care (Healthy People 2020); and demonstrate A1C reduction of 0.5 to 1.0% from baseline. b. By May 1, 2018, 80% of participants, upon completion of DSMT sessions, report daily performance of SMBG and foot care (Healthy People 2020); and demonstrate A1C reduction of 1.0 to 1.5% from baseline.</p>	<p>9. By June 1, 2020, 85% of participants, upon completion of DSMT sessions, report daily performance of SMBG and foot care (Healthy People 2020); and demonstrate A1C reduction of 1.5 to 2.0% from baseline.</p>	<p>9. Clinic patients with diabetes demonstrate A1C levels less than 8.0%.</p>
<p>10. Time, knowledge, and skills of DNP student, Project Sponsor / Program Coordinator, clinic staff, and advisory group; rented room, refreshments, and existing technology and equipment.</p>	<p>10. Using systematic review of process and outcome data, measure effectiveness of DSMT program; and identify gaps in service or quality (AADE, n.d.).</p>	<p>10. Continuous Quality Improvement (CQI) program that demonstrates intentional, systematic service improvement to increase positive patient outcomes.</p>	<p>10. a. By May 1, 2018, CQI program demonstrates DSMT education, annual eye and foot exams, A1C reduction, and follow-up for 80% of participants. b. By December 1, 2019, CQI program demonstrates DSMT education, eye and foot exams, A1C reduction, and follow-up for 85% of participants.</p>	<p>10. By June 1, 2020, CQI program confirms DSMT education, annual eye and foot exams, A1C reduction, and follow-up for 90% of participants.</p>	<p>10. Residents of local community experience no more than 3.5 diabetes-related lower extremity amputations per 1,000 persons, and no more than 66.6 diabetes-related deaths per 100,000 population (Healthy People 2020).</p>

Appendix F

Memorandum of Understanding

Memorandum of Understanding

Between

Lincoln Medical Practice

and

Bonnie Clark, RN, MSN

This Memorandum of Understanding (MOU) sets forth the terms of agreement between the Lincoln Medical Practice and Bonnie Clark, RN, MSN, Doctor of Nursing Practice (DNP) student of Boise State University to develop and implement a program of quality improvement for clinic patients with poorly-controlled diabetes.

Background

Currently, the Lincoln Medical Practice utilizes a pharmacologic approach for patients with diabetes; however, it has been noted that the disease is not well controlled in some clinic patients. After learning of the doctoral student's research on diabetes self-management training (DSMT), the providers believed the student's educational plans would benefit clinic patients with poorly-controlled diabetes.

Purpose

Therefore, the purpose of this MOU is to establish a collaborative working relationship between the Lincoln Medical Practice and Boise State University to develop and implement a pilot project of quality improvement for clinic patients with poorly-controlled diabetes. After the pilot is complete in May, 2018; it is the providers' goal to apply for certification as a Certified Diabetes Education Center to qualify for Medicare reimbursement for DSMT sessions for their patients.

This goal will be accomplished by undertaking the following activities:

- Establish an Advisory Group to guide the project, and a project work group to develop effective work structures
- Convene a focus group of clinic patients to determine educational preferences
- Procure and adapt an evidence-based clinic protocol and DSMT curriculum
- Deliver DSMT sessions for patients who meet eligibility criteria, administer and collect outcome measures, assist participants to create an individualized follow-up plan of ongoing self-management support, and document DSMT teaching and follow-up in the clinic EHR
- Evaluate effectiveness of DSMT sessions by determining whether patients achieve personal self-management goals
- Implement continuous quality improvement (CQI) program to identify gaps in quality of diabetes care and measures to improve patient outcomes

Reporting


Adherence to this agreement and effectiveness of the pilot project will be determined collaboratively by the DNP student, project sponsor (who is also a Nurse Practitioner of the Lincoln Medical Practice), clinic Medical Director, and the Advisory Group. These evaluations will take place verbally and in writing at specified intervals that will be at least before the project

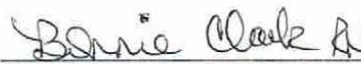
begins, bi-monthly during the project, and after the project ends. Results of the project will be disseminated at the Boise State University Executive Session in March, 2018; and shared with the Lincoln Medical Practice in May, 2018.

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Lincoln Medical Practice, Medical Director


Date: 7-18-16
Bonnie Clark, RN, MSN
Boise State University DNP student

Appendix G

Needs Assessment Demographics

No.	Last Visit	Age	Gender	Ethnicity	City	Insurance Type	Oral Diabetes Meds	Injectable Diabetes Meds	A1C
1	10/15	44	Male	Hispanic	Newcastle	Blue Cross	X	X	10.5
2	5/16	77	Female	White	Lincoln	Medicare	X		8.9
3	4/16	75	Female	--	Lincoln	Medicare		X	10.7
4	5/16	56	Female	--	Lincoln	United Healthcare		X	8.9
5	6/15	78	Female	White	Lincoln	Medicare	X		12.6
6	10/13	51	Male	--	--	Blue Cross	X		8.7
7	1/16	73	Female	White	Lincoln	Medicare		X	9.0
8	5/15	70	Female	White	Lincoln	Medicare		X	8.4
9	10/15	67	Female	--	Lincoln	Medicare	X		8.3
10	1/16	66	Male	--	Lincoln	Medicare	X		9.1
11	9/15	75	Female	Hispanic	Lincoln	Medicare		X	9.9
12	5/14	69	Male	White	Lincoln	Medicare	X	X	11.4
13	5/16	59	Female	White	Rocklin	Blue Cross	X		8.4
14	11/14	66	Male	--	Lincoln	Self-pay	X		8.4
15	4/16	60	Female	--	Rocklin	Self-pay	X		9.1
16	5/16	59	Male	White	Auburn	Medicare	X	X	9.6
17	12/12	96	Male	White	Lincoln	Blue Cross			8.1
18	5/16	81	Female	--	Lincoln	Medicare	X		9.4
19	5/16	80	Female	White	Lincoln	Medicare	X	X	8.1

20	7/13	73	Female	White	Lincoln	Medicare	X	X	8.7
21	11/15	73	Male	White	Lincoln	Medical			8.0
22	7/15	55	Male	White	Lincoln	Self-pay	X		9.6
23	4/16	70	Male	White	Lincoln	Medicare	X	X	9.9
24	4/16	48	Female	Asian	Lincoln	Blue Cross	X		9.3
25	3/16	72	Female	White	Rocklin	Medicare	X		10.2
26	1/15	67	Female	White	Antelope	Medicare	X	X	8.3
27	2/16	27	Female	White	Lincoln	Tricare		X	8.6
28	6/16	59	Female	White	Lincoln	Blue Cross	X	X	8.8
29	1/16	64	Male	White	Lincoln	Aetna	X	X	12.6
Summary									
	27-96	Female 18	White 18	Lincoln 22	Medicare 16	11	7	8.3-12.6	
	M 65.5	Male 11	Blank 18	Other 6	Blue Cross 6	Both 10		M 9.4	
			Hispanic 2	Blank 1	Self-pay 3	None 1			
			Asian 1		Other 4				

Appendix H
Diabetes Protocol
Lincoln Medical Practice

SUBJECT: **Diabetes Protocol**

PURPOSE: To provide clinic patients with a standardized method of diabetes care that is based on current evidence-based standards and will empower patients to adapt to a lifestyle that includes consistent performance of diabetes self-care behaviors and result in better glycemic control and fewer diabetes complications.

PROTOCOL: Divided into care delivery system, diabetes self-management training; and four levels of screening for diabetes, at diagnosis, glycemic control, and history of poor glycemic control.

PROCEDURE:

Care Delivery System

1. Collaborative, multi-disciplinary team focused on supporting patient behavior change.
2. Patient-centered communication that uses active listening, explores beliefs and preferences; and assesses literacy, numeracy, social context, and potential barriers to care.
3. Treatment plans aligned with six core elements of Chronic Care Model that include delivery system design, self-management and decision supports, clinical information and health systems, and community resources.
4. Timely treatment decisions that rely on evidence-based guidelines and emphasize interactions between a prepared, proactive team and an informed, activated patient.

Diabetes Self-management Training (DSMT)

1. Must demonstrate 10 national standards of supportive internal structure, input from external stakeholders, overcome access issues, program coordination, qualified instructional staff, evidence-based curriculum, individualization, ongoing self-management support, monitor patient progress, and utilize system of quality improvement.
2. Should provide education and support at the four critical times of at diagnosis, annually, and when new complicating factors and transitions in care occur.
3. Should include education on the AADE7 Self-Care Behaviors of healthy eating, being active, monitoring, taking medication, problem solving, reducing risks, and healthy coping.
4. The educational program should be structured, patient-centered; and focus on patient engagement, cognitive strategies, and self-care behavioral supports. Although not required, it is strongly suggested that the education be offered in a group-based setting, taught by a single educator, based on patient empowerment, and have a duration of more than 12 hours but less than 10 months.

Screening for Diabetes

1. Screen all asymptomatic adults for risk factors; such as A1C $\geq 5.7\%$, first-degree relative with diabetes, high-risk race/ethnicity, women with history of GDM/PCOS; and history of CVD, HTN, elevated HDL/triglycerides, physical inactivity, and conditions of insulin resistance.
2. Consider testing all adults beginning at age 45 years; and adults who are overweight or obese with one additional risk factor. If results normal, repeat testing every 3 years.
3. Diagnostic criteria – Fasting plasma glucose ≥ 126 mg/dL, 2-hour plasma glucose ≥ 200 mg/dL, or A1C $\geq 6.5\%$; confirm results by a second test. Diagnosis also made if hyperglycemia or hyperglycemic crisis present or random plasma glucose > 200 mg/dL.
4. Blood glucose used to diagnose T1D at acute onset, rather than A1C.

At Diagnosis

1. Comprehensive medical evaluation to include medical history, physical exam (including assessment for peripheral neuropathy and risk of foot ulcers and amputation), and laboratory evaluation (including lipids and urinary albumin) to confirm/classify diagnosis, and detect complications/comorbidities.
2. Referral for comprehensive dilated eye/dental exams, medical nutrition therapy (MNT), DSMT, and mental health provider PRN.
3. Instruct patients on proper performance of self-monitoring of blood glucose (SMBG); and how to use results to adjust food intake, exercise, or pharmacologic therapy.
4. If A1C $< 9\%$ /not contraindicated, Metformin is preferred pharmacologic agent; initiate insulin therapy if patient has significant symptoms, blood glucose ≥ 300 mg/dL, or A1C $\geq 10\%$.

Glycemic Control (A1C $\leq 7\%$)

1. Screenings
 - Screen all patients for episodes of hypoglycemia; attitudes about diabetes, expectations for medical management, affect/mood, diabetes-related quality of life (QOL), access to resources; psychosocial, emotional, anxiety, and eating disorders; periodontal disease, and HIV.
 - Screen all patients annually for CVD risk factors, depression; and age-appropriate screenings for cancer.
 - Assess all patients annually for urinary albumin and eGFR.
 - Refer to mental health provider or other healthcare professional as needed.
2. Immunizations
 - *Influenza vaccine* – Recommended annually for all patients.
 - *PPSV23 vaccine* – Recommended for all patients ages 2-64; adults age 65 years and older should receive PCV13 vaccine 1 year after PPSV23, and then another dose of PPSV23 1 year later.
 - *Hepatitis B series* – Recommended for unvaccinated adults ages 19-59, and should be considered for adults age 60 years and older.
3. Lifestyle management
 - Offer annual DSMT and MNT to maintain effective self-management; and improve clinical outcomes, health status, and QOL.

- Encourage patients to perform 150 minutes per week of moderate-intensity exercise/physical activity spread over at least 3 days per week, and to reduce amount of time spent in sedentary behavior.
- Advise patients not to use cigarettes, tobacco products, or e-cigarettes; and include smoking cessation education as needed.

4. Glycemic control

- *Self-monitoring of blood glucose (SMBG)* – Ongoing instruction/evaluation of technique; frequency/timing determined by patient needs; integrated into self-management plan; more frequent assessment required for intensive insulin regimens.
- *Hemoglobin A1C (A1C)* – Perform at least twice per year if treatment goals met; reasonable goal for most non-pregnant adults < 7%; goal may be more or less stringent based on patient's risk of hypoglycemia, disease duration, life expectancy, comorbidities, vascular complications, attitude/expected treatment efforts, and resources/support system.
- *Hypoglycemia* – Preferred treatment 15-20 grams of glucose, repeat in 15 minutes as needed, and eat meal/snack upon return to normal range; glucagon should be prescribed if risk of severe hypoglycemia; re-evaluate treatment regimen if one or more episodes of severe hypoglycemia/hypoglycemia unawareness.
- *Concurrent illness* – Requires more frequent monitoring of SMBG and possible adjustments in treatment regimen if hyperglycemia present; hospitalization more likely if infection or dehydration occur.

5. Pharmacologic management

- Use patient-centered approach to guide choice of pharmacologic agents that considers patient preferences, efficacy, cost, potential side effects, weight, comorbidities, and hypoglycemia risk.
- If A1C < 9%, begin with monotherapy of Metformin.

6. Cardiovascular (CV) disease

- Measure BP at each visit, and recheck on separate day if elevated; goal < 140/90 for most patients, but < 130/80 preferred if high risk of CVD.
- If BP confirmed > 140/90, advise on lifestyle therapy/initiate pharmacologic therapy; if BP > 160/100, advise on lifestyle therapy + prescribe two drugs/combination pill; important to monitor serum Cr, eGFR, and serum K.
- Lifestyle therapy – Weight loss, DASH diet, reduction of saturated/trans fats and cholesterol, moderate alcohol intake, and increased physical activity.
- Obtain lipid profile when lipid therapy initiated, and every 5 years or as needed; if elevated triglycerides, intensify lifestyle therapy and optimize glucose control.
- Consider ASA therapy for all patients at increased risk of CV risk, but prescribe clopidogrel if ASA allergy.

7. Obesity management

- BMI should be calculated/documentated in medical record at each encounter.
- Screen obese patients for obstructive sleep apnea and low testosterone in men.

- For patients ready to achieve weight loss, a high-intensity program (i.e. ≥ 16 sessions in 6 months) should be prescribed of diet, physical activity, and behavioral therapy to achieve a 500-750 kcal energy deficit and a 5% weight loss.
- For patients who achieve short-term weight loss goals, a long-term comprehensive weight maintenance program (i.e. ≥ 1 year) should be prescribed.

8. Older adults

- Screen regularly for depression and geriatric syndromes that affect self-management behaviors; screen annually for mild cognitive impairment/dementia.
- For patients who are functionally/cognitively intact and have significant life expectancy, provide diabetes care with goals similar to younger adults.
- Glycemic goals may be relaxed for older adults, but hypoglycemia and symptomatic hyperglycemia should be avoided.
- Individualized screening for diabetes complications and treatment of hypertension/CVD risk factors.
- Encourage older adults to maintain flexibility/balance 2-3 times per week through yoga, tai chi, etc.

History of Poor Glycemic Control (A1C $\geq 8\%$)

1. Screenings – Screen for diabetes distress/depression when treatment targets not met, significant change in health status, or newly diagnosed with diabetes complication.
2. Referrals – Refer to DSMT; refer to mental health provider if impaired self-care continues after DSMT.
3. Glycemic control – Perform A1C at least quarterly for patients whose therapy has changed or are not meeting glycemic goals.
4. Pharmacologic control
 - If A1C $\geq 9\%$ or target not achieved after 3 months of monotherapy, proceed to dual therapy with drug choice based on disease, drug characteristics, and patient preferences.
 - If A1C $\geq 10\%$ or target not achieved after 3 months of dual therapy, proceed to triple therapy.
 - For patients not achieving glycemic goals, proceed with insulin therapy; but develop flexible plan, and equip patients with algorithm for self-titration based on SMBG results.
 - *Basal insulin* – Most convenient regimen beginning at 10 units/0.1-0.2 units/kg; if no history of hypoglycemia, NPH can be used safely and at lower cost; if A1C remains high after basal titrated to acceptable FBS, consider advancing to combination 2 injectable therapy.
 - *Bolus insulin* – Rapid-acting insulin preferred for patients who require basal + bolus insulin; important to titrate dose, focus on pattern control, and include education on avoidance/response to hypoglycemia.

5. Microvascular complications and foot care

- *Kidney disease* – Optimize glycemic and BP control; non-dialysis protein intake 0.8g/kg per day; if moderate elevation of urinary albumin, ACE + ARB recommended; if diuretic prescribed, periodically monitor serum Cr and K; refer to kidney disease specialist PRN.
- *Retinopathy* – Optimize glycemic and BP control; comprehensive dilated eye exam within 5 years of diagnosis (T1D), and then every 2 years or as needed.
- *Neuropathy* – Optimize glycemic control; assess all patients annually with careful history, 10-g monofilament test, and temperature/pinprick or vibration sensation; treat symptomatic patients with pregabalin or duloxetine as initial pharmacologic agent.
- *Foot care* – Comprehensive foot evaluation annually to identify risk factors for ulcers/ amputations; all patients should receive general foot self-care education and have feet inspected at every visit for intact skin, deformities, and neurovascular function; refer for further vascular assessment PRN and utilize multi-disciplinary approach for foot ulcers.

DOCUMENTATION: To demonstrate use of these guidelines, all encounters between providers and staff pertaining to diabetes care must be documented in the electronic health record for each patient. These encounters might include, but not be limited to, office visits, DSMT sessions, and follow-up calls to ensure patients are consistently performing diabetes self-care.

APPROVAL PROCESS: This standardized procedure was developed collaboratively by Bonnie Clark, RN, MSN, doctoral student of Boise State University; and the providers of the Lincoln Medical Practice. This protocol is scheduled for annual review to ensure that it reflects the current American Diabetes Association standards in providing diabetes care.

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ORIGINATED: May 1, 2017

Appendix I

Community Resources - Lincoln

Podiatry Offices

Lincoln Podiatry Center	831 Sterling Pkwy (916) 434-6410	MWF 8-4pm, open during lunch; accept all insurances except MediCal
Lincoln Hills Podiatry Group	685 Twelve Bridges Dr. (916) 408-5580	Mon-Fri 8-5pm, closed 12-1; often same-day referrals; accept all insurances except MediCal

Optometry Offices

Eye-Q Optometry	100 Gateway Dr. Ste 130 (916) 434-6225	Mon-Fri 9-5, Sat 9-1; accept most insurances (PPOs, CMS, VSP, etc.)
Lincoln Optometry Center	69 Lincoln Blvd. Ste F (916) 408-0103	MWTh 9-5, Tues 9-6, Fri 8-4, open during lunch; accept CMS, BS Eye Med, VSP
Royo Eye & Laser Center	2295 Fieldstone Dr. Ste 130 (916) 408-0039	Tues 8-5 (closed 12-1), Wed 8-3; accept most insurances
Twelve Bridges Vision Care	845 Twelve Bridges Dr. Ste 130 (916) 645-3937	MTuTh 9-5, Wed 10-7, Fri 9-4, open during lunch; accept all insurances except HMO & MediCal

Pharmacies

CVS Pharmacy (inside Target)	950 Groveland Lane (916) 251-3003	Mon-Fri 9-7pm, Sat 9-5pm, Sun 11-5pm
CVS Pharmacy	63 Lincoln Blvd. (916) 408-0230	Mon-Fri 8-9pm, Sat 9-6pm, Sun 10-6pm
Lincoln Pharmacy	831 Sterling Parkway #120 (916) 209-3618	Mon-Fri 8:30-5:30pm; closed Sat / Sun; home delivery
Longs Drugs	600 McBean Park Dr. (916) 645-3349	
Raley's Pharmacy	39 Lincoln Blvd. (916) 408-3633	Mon-Fri 9-9pm, Sat / Sun 9-5:30 pm
Safeway Pharmacy	67 Lincoln Blvd. (916) 408-0810	Mon-Fri 9-8pm, Sat 9-5pm, Sun 11-5pm
Walgreens Pharmacy	700 Twelve Bridges Dr. (916) 408-0176	Mon-Fri 8-9pm, Sat 9-6pm, Sun 10-6pm; drive-through
Walmart Pharmacy	255 Lincoln Blvd. (916) 209-5176	Mon-Fri 9-9pm, Sat / Sun 10-6pm

Dentists

A+ Dental Care	945 Orchard Creek Lane #200 (916) 408-5557	Mon-Fri 7am-7pm, open weekends, 24-hr on-call emergency care available
Bella Vista Dental	825 Twelve Bridges Dr.	Wed-Thurs 8-5pm

	(916) 543-4400	
Citadel Dental	941 Sterling Parkway #100 (916) 408-8585	
Denzler Family Dentistry	588 1 st St (916) 645-2131	Mon 9-4pm (scheduling), Tues-Fri 8-5pm
Jaime M. Curtis, DDS	605 Lincoln Blvd. Ste 300 (916) 645-2700	
Integrity Dental	1530 3 rd St Ste 201 (916) 645-1138	Mon-Fri 8-5pm
Allen Latham, DDS	751 Sterling Parkway Ste 100 (916) 543-2859	Mon-Wed 8-5pm, Thurs 9-6pm, Fri 8-12
Lincoln Hills Family Dental	2295 Fieldstone Dr. Ste 100 (916) 543-0222	Mon-Fri 8-5pm
Victoria Mosur, DDS	496 East Ave (916) 645-3373	Mon-Thurs 8-5pm
Parkway Dental Group	781 Sterling Parkway (916) 543-7880	Mon 9-6pm, Tues-Thurs 8-5pm, Fri 7-4 pm; honor most dental insurances
Sterling Pointe Family Dentistry	800 Sterling Parkway #20 (916) 434-7116	Mon-Thurs 9-6pm, closed for lunch 12-1; new pt. appt. \$59; honor most insurances
Tooth Spa Dentistry	831 Sterling Parkway Ste 130 (916) 209-3708	Mon-Fri 9-6pm, Sat 9-4pm, Sun by appt only; accept most dental insurances
Yellamanchili Dental Corp	1613 Storeyfield Lane (916) 434-6851	Wed-Thurs 9-5pm

Exercise

Anytime Fitness	880 Sterling Pkwy #10 (916) 587-6100	Open 24/7; ask about specials
California Ripped Fitness	120 Gateway Drive #150 (916) 434-8066	Mon-Fri 4:30-10pm, Weekends 6-8pm Pilates, Yoga, Zumba; Boot Camps
Fitness System/ Gold's Gym	2800 Nicolaus Rd. #600 (916) 253-3600	Open 24/7; child care; \$39/month-month, \$117 3 months
Go Pro Health & Fitness	2933 Fox Den Circle (916) 865-7105	Open 24/7
Guiding Fitness	424 Lincoln Blvd. Ste 202 (916) 626-7739	
Jessica's Accelerated Bootcamp	110 Flochinni Circle (916) 677-6192	Mon-Fri classes 5-9am & 4:30-5:30pm, Sat / Sun 8am; daycare (call for availability)
Studio One Pilates	1510 Del Webb Blvd. (916) 258-5760	

Community Resources – Yuba City

Podiatry offices

Dr. Joel Berman	812 4 th St., Ste D, Marysville (530) 742-0365	Accepts Anthem, Blue Shield, Health Net PPO, & Medicare
Dr. Jason Boynton	460 Plumas Blvd. (530) 749-3343	Accepts most insurances, including Medi-Cal & Medicare
Dr. Michael Gabhart	460 Plumas Blvd. (530) 749-3343	Accepts most insurances, including Medi-Cal & Medicare
Dr. Jackson Lim	1531 Plumas Ct., Ste A (530) 674-9737	Accepts Anthem, Blue Shield, Health Net PPO, & Medicare
Dr. Aidan Nguyen	460 Plumas Blvd. (530) 749-3343	Accepts most insurances, including Medi-Cal
Dr. Christopher Page	370 Del Norte Ave., Ste 201 (530) 749-3463 470 Plumas Blvd., #201 (530) 749-3479	Accepts most insurances, including Medi-Cal & Medicare

Optometry Offices

Advanced Eyecare	1050 Live Oak Blvd. (530) 671-1740	Mon-Fri 8:00 am to 5:00 pm; Sat. 8:00 am to 1:30 pm
Bradley Optometry	1160 Live Oak Blvd. (530) 673-8440	Mon-Fri 8:15 am to 5:00 pm
Jerome Brendel, OD	1150 Harter Rd. (inside Walmart) (530) 751-0158	Mon-Fri 8:00 am to 6:00 pm; Sat 9:00 am to 3:00 pm
Butte View Optometry	1258 Stabler Lane # 620 (530) 755-9886	Mon-Fri 10:00 am to 6:00 pm
Distinctive Eyes Optometry	1641 Colusa Hwy (530) 755-0222	Tues-Fri 9:00 am to 6:00 pm; Sat 9:00 am to 2:30 pm
Ronald Kalayta, MD	901 Maple Ave. (530) 674-8170	Mon-Thurs 8:30 am to 5:00 pm
Charles Richards, OD	429 D St., Marysville (530) 742-1679	Mon-Thurs 8:00 am to 6:00 pm
Stanton Optical	444 Colusa Ave. (530) 419-6808	Mon-Sat 9:00 am to 7:00 pm
Sanders Thomas, OD	1215 Plumas St. #1100 (530) 671-2822	Mon-Fri 8:00 am to 5:00 pm
Three Rivers Optometry	1245 Tharp Rd. (530) 674-5273	Mon, Tues, Thurs, Fri 8:00 am to 6:00 pm; Wed 8:30 am to 6:00 pm

August 2017

Pharmacies

Bel Air Pharmacy	1286 Stabler Ln (530) 755-9917	Mon-Fri 9:00 am to 9:00 pm, Sat 9:00 am to 5:00 pm
CVS Pharmacy (inside Target)	1153 Butte House Rd (530) 671-1828	Mon-Fri 9:00 am to 7:00 pm, Sat 9:00 am to 5:00 pm, Sun 11:00 am to 5:00 pm
Franklin Pharmacy	1619 Franklin Rd Apt A (530) 674-3277	Mon-Fri 9:00 am to 7:00 pm, Sat 10:00 am to 5:00 pm
Mission Pharmacy Services	400 Plumas Blvd Ste 100 (530) 674-7214	Mon-Fri 9:00 am to 5:30 pm
Raley's Pharmacy	700 W Onstott Frontage Rd Ste C (530) 673-8880	Mon-Fri 9:00 am to 9:00 pm, Sat/Sun 9:00 am to 5:30 pm
Rite Aid Pharmacy	1590 Butte House Rd. (530) 755-3846	Mon-Fri 9:00 am to 9:00 pm, Sat 9:00 to 6:00 pm, Sun 10:00 am to 6:00 pm
Riverside Pharmacy	866 Plumas St Ste C (530) 751-1889	
Savesafe Pharmacy	737 Colusa Ave. (530) 674-3550	Mon-Fri 9:00 am to 6:00 pm, Sat 9:00 am to 1:00 pm
Walgreens Pharmacy	855 Colusa Hwy (530) 674-5133	Open 24 hours
Walmart Pharmacy	1150 Harter Pkwy (530) 751-2701	Mon-Fri 9:00 am to 9:00 pm, Sat 9:00 am to 7:00 pm, Sun 10:00 am to 6:00 pm

Dentists

Sunny Badyal, DDS	1408 Live Oak Blvd.	Mon-Thurs 8:00 am to 5:00 pm; Fri 9:00 am to 3:00 pm
Merlyn Carver, DDS	1408 Live Oak Blvd. (530) 671-1810	
Cordano Spears Dental	950 Tharp Rd., Ste 400 (530) 671-2750	Mon-Thurs 8:00 am to 5:00 pm
Benjamin Counihan, DDS	421 Del Norte Ave. (530) 671-5858	Mon-Thurs 8:00 am to 5:00 pm
Fit Dental	540 Bogue Rd., #W-6 (530) 738-3033	Mon-Fri 8:00 am to 5:00 pm; Sat by appointment
Melissa Lee Dental Office	1215 Plumas St., Ste 1901 (530) 751-7561	Mon-Fri 8:00 am to 5:00 pm
Reading and Reid Fine Dentistry	933 Shasta St (530) 812-8779	Mon-Thurs 8:00 am to 5:00 pm
River Oaks Dental	1424 Live Oak Blvd. (530) 671-2344	Mon-Thurs 8:00 am to 5:00 pm
Harjinder Singh, DDS	1675 Butte House Rd. (530) 674-4440	Mon-Fri 8:30 am to 5:30 pm

Yuba City Dentistry	1052 Live Oak Blvd. (530) 671-4784	Mon, Tues, Thurs, Fri 8:00 am to 5:00 pm
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Do you or someone you know have diabetes?

Please talk to your Lincoln Medical Practice provider today about a program of diabetes care that we started on May 1, 2017.

This program will include diabetes education, monitoring, and follow-up support for diabetes self-management.

**Thank you,
Lincoln Medical Practice
providers and staff
89 Lincoln Blvd., Lincoln CA 95648
(916) 434-8800**



Do you or someone you know have diabetes?

Please consider contacting the Lincoln Medical Practice about a program of diabetes care that is starting on May 1, 2017.

This program will include diabetes education, monitoring, and follow-up support for diabetes self-management.

**Thank you,
Lincoln Medical Practice providers and staff
89 Lincoln Blvd., Lincoln CA 95648
(916) 434-8800**



Appendix K

Diabetes Self-Management Training Curriculum

Session 1

- What is diabetes? (booklet)
- Checking your blood sugar
- High blood sugar
- Low blood sugar
- Know your numbers

Session 2

- Type 2 diabetes and role of GLP-1
- Reading a nutrition facts label
- Building a balanced meal
- Carb counting and meal planning (booklet)
- Emotional side of diabetes

Session 3

- Dining out with diabetes
- Making healthy fast food choices
- Staying on track – 3-month diary (booklet)
- Managing diabetes safely during sick days
- Foot care for people with diabetes

Session 4

- Keeping your feet active
- Diabetes and your eyes
- Traveling with diabetes
- Working shifts safely with diabetes
- Your guide to better office visits (booklet)

Appendix L

Diabetes Self-management Plan

Meal plan	Method used:		
Activity plan	Method(s):		Duration / Frequency:
Fingerstick blood glucose	Goal:	Frequency:	Current medication(s) used to control:
A1C	Goal:	Frequency:	Date of next A1C:
Blood pressure	Goal:	Frequency:	Current medication(s) used to control:
Cholesterol	Goal:	Frequency:	Current medication(s) used to control:
Feet	Date of annual foot exam:		
Eyes	Date of annual dilated eye exam:		
Dental	Date of annual dental exam:		
Kidneys	Date of annual evaluation:		
Immunizations	Date of next immunizations (e.g. influenza, pneumonia, hepatitis B):		
Quit smoking	Date you plan to quit smoking:		

Appendix M

Diabetes Columns for Lincoln Newspaper

Diabetes – Part 1

You might have wondered recently why diabetes is being mentioned more in advertisements, magazines, and in the news. Primarily, this has to do with several decades of data showing an alarming increase in the number of people with diabetes. It has been estimated that 25.8 million people in the United States have diabetes, which represents a 400 percent increase since 1980. If these rates continue, it is estimated that 30 million Americans will have diabetes by 2030.

What is diabetes?

When we eat, our food is broken down into glucose that is taken into our circulation. Insulin is a hormone released by the pancreas, one of our digestive organs; and it is responsible for transporting this glucose into our body's cells for energy. If extra glucose is circulating in the system, insulin converts it for storage in the liver. Diabetes is a group of metabolic disorders characterized by increased levels of blood glucose due to not enough insulin, or insulin not being used by the body.

Type 1 or Type 2?

In 2016, a team of researchers identified five types of diabetes; but the ones that we hear about most are Type 1 and Type 2 diabetes. Type 1 diabetes occurs in 5 to 10 percent of people with diabetes, and they are usually diagnosed in childhood or early adulthood. This type of diabetes is caused by the person's body attacking the cells in the pancreas that produce insulin. Type 2 diabetes occurs in 90 to 95 percent of people with diabetes; and they are usually diagnosed as an adult or older adult. This type of diabetes is caused by a decrease in the amount of insulin produced by the pancreas, or by the body's tissues being less sensitive to insulin.

Am I at risk?

Risk factors for diabetes can be divided into two categories – those that we cannot change, and those that we can change. Risk factors that we cannot change include family history of diabetes, being of non-Caucasian ethnicity, and being 45 years of age or older. Risk factors that we can change include obesity, hypertension, elevated cholesterol levels, and a history of impaired glucose tolerance.

How would I know if I have diabetes?

One of the biggest problems contributing to the increasing rates of diabetes is that symptoms of the disease can be very subtle at first. The classic symptoms of diabetes include excessive thirst, excessive hunger, and excessive urination. However, the more subtle signs include fatigue, weakness, dry skin, skin wounds that are slow to heal, and recurrent infections. Other symptoms

that can occur after having uncontrolled diabetes for several years include vision changes and tingling or numbness in the hands and feet. If you, or anyone that you know, is experiencing any of these symptoms; please check with your healthcare provider about being tested for diabetes.

Two more columns are planned for this series. The second column will discuss the complex regimen that a person with diabetes must follow to control their blood sugar, and the complications that can happen if blood sugar is not controlled over time. The third column will discuss how family, friends, and co-workers can better support a person with diabetes; and measures that can be taken to help prevent diabetes for yourself.

For more information, send an email to bonnieclark661@u.boisestate.edu

Diabetes – Part 2

Diabetes complications are caused by high levels of blood sugar over time that irritate the linings of small blood vessels in our bodies. These complications can include vision changes that can lead to blindness, high blood pressure and heart disease, kidney failure, loss of sensation in the hands or feet, and non-healing foot ulcers that can lead to amputations. To prevent or slow the development of these complications, the American Academy of Diabetes Educators recommends that persons with diabetes consistently perform seven self-care behaviors. These behaviors include healthy eating, being active, monitoring, taking medication, problem solving, reducing risks, and healthy coping.

Healthy eating

Perhaps the most challenging aspect of diabetes care involves developing a healthy meal plan. This can be done by dividing a 9-inch dinner plate in half, and filling half of the plate with non-starchy vegetables. One fourth of the plate should be filled with protein, and the other fourth of the plate should be filled with grains and starchy foods. The meal may also include small servings of fruit and dairy, as well as a low-calorie drink.

Meal planning involves counting carbohydrates, which can be determined by identifying the portion size and total carbohydrates per serving from the Nutrition Facts label. A general rule is that a meal should consist of 45 to 60 grams of carbohydrates, while snacks can have 15 to 20 grams of carbohydrates. The important thing to remember is that people with diabetes are still able to eat the foods that they enjoy, but they need to count carbs and monitor portion sizes.

Being active

The American Diabetes Association recommends that people with diabetes exercise at a moderate level of intensity for 30 minutes a day and at least 5 days per week. Simple ways that exercise can be added into the day include walking the dog, taking the stairs at work, and doing Tai chi. The important thing is to start slowly, and exercise with a friend if possible.

Monitoring

Monitoring blood sugar levels involves performing a finger stick blood sugar between two and four times per day, and recording these levels in a log. Self-monitoring of blood glucose is considered the cornerstone of diabetes care, and controlling blood sugar levels is the most reliable way to prevent diabetes complications. In addition, the hemoglobin A1C blood test should be checked every 3 to 6 months, depending on whether the level is well controlled.

Taking medication

Medications to help control blood sugar must be taken every day, at around the same time of day, and timed with meals to prevent low blood sugar. Some people with diabetes take

medications by mouth, others must give themselves injections of insulin into the fat layer under the skin, while others take both oral and injectable medications. It also recommended that they receive an annual flu vaccine, as well as immunizations for pneumonia and hepatitis B as needed.

Problem solving, Reducing risks, and Healthy coping

Problem solving with diabetes involves remembering that no one is perfect, and not becoming upset with oneself for getting off track. If this happens, the person with diabetes should analyze what happened, learn from it, and then make plans to prevent the situation from happening again. Reducing risks of diabetes complications includes smoking cessation, seeing the healthcare provider regularly; and having annual exams of the eyes, teeth, and feet. In addition, the person with diabetes should check their feet daily for any sores or wounds. Healthy coping with diabetes involves thinking positive and seeking support from friends, family, and the healthcare provider as needed. It is also important to remember that diabetes complications can still occur as the disease progresses, even if the person consistently performs the required self-care behaviors.

One more column is planned for this series that will discuss how family, friends, and co-workers can better support a person with diabetes; and measures that can be taken to help prevent diabetes for yourself.

For more information, send an email to bonnieclark661@u.boisestate.edu

Diabetes – Part 3

Diabetes is a complicated disease, and the behaviors that must be performed consistently to control blood sugar levels are quite involved. The purpose of this third and final column is to describe how family, friends, and co-workers can better support a person with diabetes; and to suggest ways that you can help prevent diabetes for yourself.

Seven self-care behaviors

The most effective way to support a person with diabetes is to adopt a diet of consistent carbohydrates and controlled portion sizes. When dining out with the person, plan ahead to eat at a restaurant that has low-carb options on their menu.

Exercising with the person can be very encouraging; and this might include taking the stairs, walking, or being their work-out buddy at the gym.

Encouraging the person with diabetes to monitor their blood sugar should be done in a positive way. This could be done by asking what their blood sugar was this morning, and thanking them for checking their level regularly! If their blood sugar was at a good level, tell them they are doing a great job. If their blood sugar was not at a good level, ask them what you could do to better support their diabetes care.

Consider asking which diabetes medications they take, and find out if they need to be taken at times related to meals or activity. If they describe difficulties with their medications, encourage the person to contact their healthcare provider.

If the person with diabetes has any problems with obtaining glucometer supplies, prescription copays, or getting back on track with their diabetes care; encourage them to contact their healthcare provider. Also consider performing daily foot care with the person (if you happen to live with them); and help them to keep appointments for annual exams of their eyes, teeth, and feet. When possible, support the person with positive thinking about having diabetes, and suggest that they contact the healthcare provider if they feel discouraged about their diabetes self-care.

How to prevent diabetes for yourself

If you are 45 years of age or older, ask your healthcare provider to check your hemoglobin A1C level every 3 to 5 years. If you are an immediate family member of the person with diabetes, your risk of developing the disease will be reduced if you eat a healthy diet of consistent carbohydrates and controlled portion sizes. Exercising at a level of moderate intensity for 30 minutes per day and five times person can also lower your risk; and it might help you lose weight as well, which could also reduce your risk of developing diabetes.

In the end, we could all do more to lower our risk of diabetes; and people with diabetes that we know within our family, circle of acquaintances, or at work would be better supported if we adopted the same regimens of diet and exercise. In addition to becoming healthier and feeling better ourselves, we might help reduce the rates of diabetes in our nation; which could save billions of dollars that the U.S. healthcare system spends on diabetes care each year.

For more information, send an email to bonnieclark661@u.boisestate.edu

Appendix N

Diabetes Teaching Packets

Newly-diagnosed Diabetes (1)*Diabetes and you*

- High blood sugar
- Low blood sugar
- Reading a nutrition facts label

Newly-diagnosed Diabetes (2) / A1C > 8.0*Carb counting & meal planning*

- Building a balanced meal
- Dining out with diabetes

Newly-diagnosed Diabetes (3) / A1C > 8.0*Staying on track**Your guide to better office visits*

- AADE7 Being Active

New Oral Meds / New to Insulin*Diabetes Medicines**Staying on Track*

- AADE7 Being Active

Individual Booklets

- *Carb counting & meal planning*
- *Diabetes and you*
- *Diabetes medicines*
- *Staying on track*
- *Your guide to better office visits*

Individual Topics

- AADE7 Being Active
- Building a balanced meal
- Checking blood sugar
- Diabetes and your eyes
- Dining out with diabetes
- Emotional side of diabetes
- Foot care for people with diabetes
- High blood sugar
- Low blood sugar
- Making healthy fast food choices
- Managing diabetes safely during sick days
- Reading a Nutrition Facts label
- Traveling with diabetes
- What is diabetes?
- Working shifts safely with diabetes

Individual pamphlets

- Diabetes medicines: Why medicines matter
- Know your numbers
- Understand your A1C
- 3-day blood sugar tracker

- Very successful
 - Successful
 - Neutral
 - Unsuccessful
 - Decline to answer
-
- Please rank the following tasks as most important (1) to least important (5) to accomplishing the clinic's mission to become a certified diabetes education center.
 - Drafting a (plan)
 - Setting guidelines and advising the clinic toward completion of certification requirements
 - Implementation of the project
 - Monitoring (project)
 - Public education
 - Other

 - What is the clinic's major unmet need in providing diabetes care?
-
-
- Please include additional comments here.

References

Idaho Department of Environmental Quality. (2010, January). Watershed Advisory Group satisfaction survey: Mid Snake WAG. Retrieved from http://www.deq.idaho.gov/media/593633-wag_survey.pdf

Appendix P
Demographic Survey

Please take a few minutes to answer some brief questions that will help us to better meet your learning needs during these diabetes self-management training sessions. Please do not put your name on this survey, so that the results cannot be identified with your participation in the program.

1. What is your age in years? _____
2. With which gender do you identify? _____
3. With which racial or ethnic group do you identify? _____
4. Please describe your employment status. _____
5. Please describe your marital status. _____
6. What is the highest grade level or college degree that you have completed? _____
7. How many years has it been since you were diagnosed with diabetes? _____
8. If you know your most recent hemoglobin A1C level, please write that here. _____
9. If you are taking oral medications for diabetes, please list the number of medicines. _____
10. If you are taking injectable insulin for diabetes, please list the number of insulins. _____

Adapted from Steinsbekk, A., Rygg, L. O., Lisulo, M., Rise, M. B., & Fretheim, A. (2012). Group based diabetes self-management education compared to routine treatment for people with type 2 diabetes: A systematic review and meta-analysis. *BioMed Central Health Services Research, 12*, 1-19. doi:10.1186/1472-6963-12-213

Appendix Q

Diabetes Empowerment Scale-Short Form[®] (DES-SF)

University of Michigan Diabetes Research and Training Center

The 8 items below constitute the DES-SF[®]. The scale is scored by averaging the scores of all completed items (Strongly Disagree = 1, Strongly Agree = 5).

Check the box that gives the best answer for you.

In general, I believe that I:

- | | | | | | | |
|----|---|--|--|---------------------------------------|---|---|
| 1. | ... know what part(s) of taking care of my diabetes that I am dissatisfied with. | <input type="checkbox"/> 1
Strongly
Disagree | <input type="checkbox"/> 2
Somewhat
Disagree | <input type="checkbox"/> 3
Neutral | <input type="checkbox"/> 4
Somewhat
Agree | <input type="checkbox"/> 5
Strongly
Agree |
| 2. | ... am able to turn my diabetes goals into a workable plan. | <input type="checkbox"/> 1
Strongly
Disagree | <input type="checkbox"/> 2
Somewhat
Disagree | <input type="checkbox"/> 3
Neutral | <input type="checkbox"/> 4
Somewhat
Agree | <input type="checkbox"/> 5
Strongly
Agree |
| 3. | ... can try out different ways of overcoming barriers to my diabetes goals. | <input type="checkbox"/> 1
Strongly
Disagree | <input type="checkbox"/> 2
Somewhat
Disagree | <input type="checkbox"/> 3
Neutral | <input type="checkbox"/> 4
Somewhat
Agree | <input type="checkbox"/> 5
Strongly
Agree |
| 4. | ... can find ways to feel better about having diabetes. | <input type="checkbox"/> 1
Strongly
Disagree | <input type="checkbox"/> 2
Somewhat
Disagree | <input type="checkbox"/> 3
Neutral | <input type="checkbox"/> 4
Somewhat
Agree | <input type="checkbox"/> 5
Strongly
Agree |

- | | | | | | | |
|----|---|---|---|---------------------------------------|--|--|
| 5. | ... know the positive ways I cope with diabetes-related distress. | <input type="checkbox"/> 1
Strongly Disagree | <input type="checkbox"/> 2
Somewhat Disagree | <input type="checkbox"/> 3
Neutral | <input type="checkbox"/> 4
Somewhat Agree | <input type="checkbox"/> 5
Strongly Agree |
| 6. | ... can ask for support for having and caring for my diabetes when I need it. | <input type="checkbox"/> 1
Strongly Disagree | <input type="checkbox"/> 2
Somewhat Disagree | <input type="checkbox"/> 3
Neutral | <input type="checkbox"/> 4
Somewhat Agree | <input type="checkbox"/> 5
Strongly Agree |
| 7. | ... know what helps me stay motivated to care for my diabetes. | <input type="checkbox"/> 1
Strongly Disagree | <input type="checkbox"/> 2
Somewhat Disagree | <input type="checkbox"/> 3
Neutral | <input type="checkbox"/> 4
Somewhat Agree | <input type="checkbox"/> 5
Strongly Agree |
| 8. | ... know enough about myself as a person to make diabetes care choices that are right for me. | <input type="checkbox"/> 1
Strongly Disagree | <input type="checkbox"/> 2
Somewhat Disagree | <input type="checkbox"/> 3
Neutral | <input type="checkbox"/> 4
Somewhat Agree | <input type="checkbox"/> 5
Strongly Agree |

Campbell, Pam <pamcamp@med.umich.edu>

Dear Ms. Clark,

Please feel free to use any of our survey instruments. We just ask that you please cite our Center as follows: The project described was supported by Grant Number P30DK092926 (MCDTR) from the National Institute of Diabetes and Digestive and Kidney Diseases.

Thank you,

*Pam Campbell
Michigan Diabetes Research Center
Michigan Center for Diabetes Translational Research
University of Michigan Medical School
1000 Wall Street, RM# 6100
Brehm Tower
Ann Arbor, Michigan 48105
Tel: 734-763-5730
Fax: 734-647-2307*

Remember to cite the Michigan Diabetes Research Center (MDRC) and/or the Michigan Center for Diabetes Translational Research (MCDTR) in publications:

"The project described was supported by Grant Number P30DK020572 (MDRC) from the National Institute of Diabetes and Digestive and Kidney Diseases" OR the project described was supported by Grant Number P30DK092926 (MCDTR) from the National Institute of Diabetes and Digestive and Kidney Diseases."

(email received 2/1/17)

Appendix R

Summary of Diabetes Self-Care Activities Questionnaire[®] (SDSCA)

The questions below ask you about your diabetes self-care activities during the past 7 days. If you were sick during the past 7 days, please think back to the last 7 days that you were not sick.

DietNumber of Days

1. How many of the last SEVEN DAYS have you followed a healthful eating plan? 0 1 2 3 4 5 6 7
2. On average, over the past month, how many DAYS PER WEEK have you followed your eating plan? 0 1 2 3 4 5 6 7
3. On how many of the last SEVEN DAYS did you eat five or more servings of fruits and vegetables? 0 1 2 3 4 5 6 7
4. On how many of the last SEVEN DAYS did you eat high-fat foods, such as red meat or full-fat dairy products? 0 1 2 3 4 5 6 7

Physical Activity

5. On how many of the last SEVEN DAYS did you participate in at least 30 minutes of physical activity? 0 1 2 3 4 5 6 7
(Total minutes of continuous activity, including walking).
6. On how many of the last SEVEN DAYS did you participate in a specific exercise session (such as swimming, walking, biking) other than what you do around the house or as part of your work? 0 1 2 3 4 5 6 7

Blood Sugar Testing

7. On how many of the last SEVEN DAYS did you test your blood sugar? Number of Days
- 0 1 2 3 4 5 6 7
8. On how many of the last SEVEN DAYS did you test your blood sugar the number of times recommended by your health-care provider?
- 0 1 2 3 4 5 6 7

Foot Care

9. On how many of the last SEVEN DAYS did you check your feet?
- 0 1 2 3 4 5 6 7
10. On how many of the last SEVEN DAYS did you inspect the inside of your shoes?
- 0 1 2 3 4 5 6 7

Smoking

11. Have you smoked a cigarette, even a puff, in the past SEVEN DAYS? 0 No 1 Yes ≡ 11a. How many cigarettes did you smoke on an average day?
- Number of cigarettes:

Thank you for your Payment for the Summary of Diabetes Self Care Activities Questionnaire (SDSCA)

Deborah Toobert <Deborah@ori.org>

2:56
PM

Dear Bonnie,

Thank you for your payment of \$25 for permission to use the Summary of Diabetes Self Care Activities (SDSCA) in your study. Now that we have received your payment, you have our permission to use the English version of the Summary of Diabetes Self-Care Activities Questionnaire in your research project and we will be able to provide answers to any questions you may have. We have attached the 2000 Diabetes Care article with the SDSCA psychometric information. At the end of the article, there is an appendix with the English version of the questionnaire, and the scoring information. We have also attached a user-friendly copy of the English version of the SDSCA instrument.

If you need a translation of the SDSCA please contact me first, as the SDSCA has been translated into many languages.

Please be sure to check our website first for the most frequently asked questions:

<http://www.ori.org/sdsca>

We wish you every success with your research,

Deborah

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(email received 2/1/17)

Appendix S
Participant Survey

Please take a few minutes to provide feedback that will help us to improve these diabetes self-management training sessions for future participants. Please do not put your name on this survey, so that the results cannot be identified with your participation in the program.

On a scale of 1 to 5, where 5 indicates the highest level of agreement and 1 indicates the lowest level of agreement; please rate the following by circling the appropriate number:

- | | | | | | |
|--|---|---|---|---|---|
| 1. The training sessions lived up to my expectations. | 1 | 2 | 3 | 4 | 5 |
| 2. The content of the training sessions is relevant to my diabetes goals. | 1 | 2 | 3 | 4 | 5 |
| 3. The in-class activities stimulated my learning. | 1 | 2 | 3 | 4 | 5 |
| 4. The pace of these sessions is appropriate. | 1 | 2 | 3 | 4 | 5 |
| 5. The training location is comfortable. | 1 | 2 | 3 | 4 | 5 |
| 6. The instructor was professional and courteous. | 1 | 2 | 3 | 4 | 5 |
| 7. The information presented on diabetes self-management increased my awareness of how to live a healthier life. | 1 | 2 | 3 | 4 | 5 |
| 8. I would highly recommend these training sessions to a friend. | 1 | 2 | 3 | 4 | 5 |
| 9. The teaching by the instructor was effective. | 1 | 2 | 3 | 4 | 5 |

Please describe any suggestions that you might have for improving the training sessions.

Please describe the least valuable part of the training sessions.

Adapted from Renda, S., Baernholdt, M., and Becker, K. (2016, January). Evaluation of a worksite diabetes education program at a large urban medical center. *Workplace Health and Safety*, 64, 17-23. doi: 10.1177/2165079915607869

Susan Renda <srenda1@jhu.edu>

6:01 PM
(2 hours
ago)

Hi Ms. Clark,

You may certainly use the evaluation questions for your DSMT sessions.

Good luck with your project,

Susan Renda, DNP, ANP-BC, CDE, FNAP
Assistant Professor
Johns Hopkins University School of Nursing
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srenda1@jhu.edu

(email received 2/11/17)

Appendix T

Data Table: 3-month Follow-up Results for Diabetes Self-management Training

Random number assignment	Self-monitoring of blood glucose	Foot care	Baseline A1C	Follow-up A1C	Change from baseline	Reduction of 0.5 to 1.0% from baseline
28	Daily	Daily	6.9%	6.2%	- 0.7%	Yes
29	2-3 days per week	2-3 days per week	6.9%	6.7%	- 0.2%	No
34	Daily	Daily	7.2%	7.1%	- 0.1%	No
42	Daily	Daily	7.3%	Due 1/18	--	--
48	Daily	Daily	12.0%	6.6%	- 5.4%	Yes
61	Daily	Daily	6.3%	5.9%	- 0.4%	--
78	Daily	Daily	8.5%	Overdue	--	--
94	Daily	Daily	6.0%	7.3%	+ 1.3%	No
97	Daily	Daily	10.0%	6.7%	- 3.3%	Yes
	Daily 89%	Daily 89%	Range 6.0 to 12.0%	Range 6.2 to 7.3%	Range - 0.1% to + 1.3%	Goal met 50%
	Less than daily 11%	Less than daily 11%	Mean 7.9%	Mean 6.8%	Mean - 1.3%	Goal not met (but glycemic control) 50%

Appendix U
Outcomes Evaluation Table

	Outcome Instrument Data	Analysis Goal	Analytic Technique
1. c. During post-project meeting, at least 4 advisory group members complete adapted stakeholder survey.	Reason for project involvement, satisfaction, resources, success, future tasks, and unmet needs.	Summarize advisory group responses to questions related to perceptions of value and quality of program services.	Descriptive statistics: Frequency of completed advisory group surveys, and median response on survey items. Qualitative data: Summary of ways healthcare improvement project could be improved.
2. b. During post-project meeting, at least 2 work group members complete adapted stakeholder survey.	Reason for project involvement, satisfaction, resources, success, future tasks, and unmet needs.	Summarize work group responses to questions related to perceptions of value and quality of project services.	Descriptive statistics: Frequency of completed work group surveys, and median response on survey items. Qualitative data: Summary of ways healthcare improvement project could be improved.
3. c. By November 1, 2017, Program Coordinator completes 15 hours of continuing education in diabetes management.	Direct observation of CE certificate(s).	Affirm appropriate credentials of Program Coordinator to fulfill certification requirements.	Descriptive statistic: Count of continuing education hours earned by Program Coordinator in diabetes management.
4. a. By May 1, 2018, clinic completes all 23 required elements for certification as Certified Diabetes Education Center.	Direct observation of application checklist.	Affirm clinic progressing toward fulfillment of certification requirements.	N/A
5. a. By May 1, 2017, patient-centered, written DSMT curriculum adapted to local context; and distributed to advisory and work group members.	Direct observation of AADE-approved DSMT curriculum and list of diabetes self-management support services.	Affirm patient-centered, written DSMT curriculum; and formalized, written list of diabetes self-management	N/A

b. By May 1, 2017, formalized, written list of diabetes self-management support services developed; and distributed to advisory group and clinic staff.		support services to fulfill certification requirements.	
6. b. By December 1, 2017, DSMT referrals made within 1 week; and diabetes protocol used for 90% of patients with history of poor glycemic control.	Direct observation of clinic referral log, and documentation in patient EHR.	Affirm timely DSMT referrals, and diabetes protocol use for majority of patients with history of poor glycemic control.	Descriptive statistics: Frequencies of DSMT referrals made within 1 week, and patients for whom diabetes protocol used.
7. b. By November 1, 2017, 80% of participants attend at least 3 DSMT sessions; and self-report demographics, increased diabetes empowerment, and performance of self-care activities for at least 5 out of last 7 days, and positive program satisfaction.	Direct observation of DSMT attendance logs; and completion of adapted participant demographic and satisfaction surveys, 28-item Diabetes Empowerment Scale, and 25-item Summary of Diabetes Self-Care Activities questionnaire.	Summarize participant demographics, changes in perceptions of diabetes empowerment and performance of diabetes self-care activities, and levels of program satisfaction.	Descriptive statistics: With the goal of 80% of DSMT participants 1) Frequency and percentage of completed series; 2) frequency and percentage of completed demographics, Diabetes Empowerment Scale, and Diabetes Self-Care Activities questionnaire; median response on survey items; and frequency and percentage of scores that improved, remained unchanged, or decreased; and 3) frequency and percentage of completed participation surveys, and median response on survey items. Qualitative data: Summary of ways to improve DSMT.
8. b. By November 1, 2017, 85% of DSMT participants receive written follow-up plan of diabetes self-management support that is documented in EHR.	Direct observation of clinic follow-up log and EHR documentation.	Affirm development of individualized follow-up plans for majority of DSMT participants, and documentation in EHR.	Descriptive statistics: With the goal of 85% of DSMT participants, frequency and percentage of follow-up plans of diabetes self-management support documented in EHR.
9. a. By November 1, 2017, upon DSMT completion, 75% of participants report daily performance of SMBG and foot care; and demonstrate A1C reductions of 0.5 to 1.0% from baseline.	Direct observation of clinic log, and documentation in patient EHR.	Affirm DSMT participants perform daily SMBG and foot care, and demonstrate A1C reductions from baseline.	Descriptive statistics: With the goal of 75% of DSMT participants, frequency and percentage who report daily performance of SMBG and foot care; and range, percentage, and A1C mean value compared to baseline.

<p>10. a. By May 1, 2018, CQI program demonstrates 80% of DSMT participants receive follow-up, and annual eye and foot exams; and demonstrate A1C reductions.</p>	<p>Direct observation of clinic referral and follow-up logs, and documentation in patient EHR.</p>	<p>Affirm through clinic log and EHR documentation that majority of DSMT participants received follow-up care, annual eye and foot exams; and demonstrate A1C reductions.</p>	<p>Descriptive statistics: With the goal of 80% of DSMT participants, frequency and percentage who receive follow-up plans for diabetes self-management support, and annual eye and foot exams; and A1C range, percentages, and mean when compared to baseline.</p>
---	--	---	---

Appendix V

Scholarly Project Statement of Operations

Revenues		
	<u>Projected</u>	<u>Actual</u>
<i>In-kind Donation of Salary Hours</i> (Source – DNP student, clinic staff, and newspaper editor)	(\$7001)	(\$7001)
<i>In-kind Donation of Benefits</i> (Source – DNP student, clinic staff, and newspaper editor)	(\$3768)	(\$3768)
<i>In-kind Donation of Project Revenues</i> (Source – DNP student)	(\$1414)	(\$1518)
Total	(\$12,183)	(\$12,287)
Expenses		
	<u>Projected</u>	<u>Actual</u>
Printing costs	\$271	\$348
Refreshments	\$447	\$401
Appreciation gifts	\$104	\$127
Communications	\$15	\$21
Teaching supplies	\$242	\$286
Transportation	\$335	\$335
Total	\$1414	\$1518
<i>In-kind Operating Income</i>	(\$10,769)	(\$10,769)
Actual Operating Income	\$0	\$0

Appendix W

Results for Outcome Evaluation Table

	Analytic Technique	Results
1. c. During post-project meeting, at least 4 advisory group members complete stakeholder survey.	<p>Descriptive statistics: Frequency of completed advisory group surveys, and median response on survey items.</p> <p>Qualitative data: Summary of ways healthcare improvement project could be improved.</p>	<p>8 advisory group members 3 members attended post-project meeting and completed surveys</p> <p>Frequency, percentage, and median responses on survey items (Appendix Y) Qualitative data (Appendix Y)</p>
2. b. During post-project meeting, at least 2 work group members complete adapted stakeholder survey.	<p>Descriptive statistics: Frequency of completed work group surveys, and median response on survey items.</p> <p>Qualitative data: Summary of ways healthcare improvement project could be improved.</p>	<p>3 work group members 2 members attended post-project meeting and completed surveys</p> <p>Frequency, percentage, and median responses on survey items combined with advisory group surveys (Appendix Y) Qualitative data combined with advisory group surveys (Appendix Y)</p>
3. c. By November 1, 2017, Program Coordinator completes 15 hours of continuing education in diabetes management.	Descriptive statistic: Count of continuing education hours earned by Program Coordinator in diabetes management.	Program Coordinator to be hired in 2018
4. a. By May 1, 2018, clinic completes all 23 required elements for certification as Certified Diabetes Education Center.	N/A	On track to fulfill this outcome in 2018
5. a. By May 1, 2017, adapt patient-centered, written DSMT curriculum to local context; and distribute to advisory and work group members.	N/A	Fulfilled by May 1, 2017 (Appendix J)

<p>b. By May 1, 2017, develop formalized, written list of diabetes self-management support services; and distribute to advisory group and clinic staff.</p>		<p>Fulfilled by July 1, 2017 (Appendix H)</p>
<p>6. b. By December 1, 2017, DSMT referrals made within 1 week; and diabetes protocol used for 90% of patients with history of poor glycemic control.</p>	<p>Descriptive statistics: Frequencies of DSMT referrals made within 1 week, and patients for whom diabetes protocol used.</p>	<p>100% of DSMT referrals (n=16) made within 1 week of identified need</p> <p>Unable to determine protocol usage from EHR documentation</p>
<p>7. b. By November 1, 2017, 80% of participants attend at least 3 DSMT sessions; and self-report demographics, increased diabetes empowerment, and performance of self-care activities for at least 5 out of last 7 days, and positive program satisfaction.</p>	<p>Descriptive statistics: With the goal of 80% of DSMT participants 1) Frequency and percentage of completed series; 2) frequency and percentage of completed demographics, Diabetes Empowerment Scale, and Diabetes Self-Care Activities questionnaire; median response on survey items; and frequency and percentage of scores that improved, remained unchanged, or decreased; and 3) frequency and percentage of completed participation surveys, and median response on survey items.</p> <p>Qualitative data: Summary of ways to improve DSMT.</p>	<p>1) 90% of DSMT participants (n=10) completed 4-class series</p> <p>2) 100% of remaining participants (n=9) completed demographic, DES, and SDSCA measures; demographic survey (Appendix T) – frequency, percentage, and mean; DES (Appendix V) – frequency, mean, range, percentage, and percentage difference; SDSCA (Appendix W) – frequency, percentage, percentage difference, and category</p> <p>3) 100% of remaining participants (n=9) completed participant surveys (Appendix X)</p>
<p>8. b. By November 1, 2017, 85% of DSMT participants receive written follow-up plan of diabetes self-management support that is documented in EHR.</p>	<p>Descriptive statistics: With the goal of 85% of DSMT participants, frequency and percentage of follow-up plans of diabetes self-management support documented in EHR.</p>	<p>100% of remaining DSMT participants (n=9) received follow-up plans of diabetes self-management support that were documented in EHR</p>
<p>9. a. By November 1, 2017, upon DSMT completion, 75% of participants report daily performance of SMBG and foot care; and demonstrate A1C reductions of 0.5 to 1.0% from baseline.</p>	<p>Descriptive statistics: With the goal of 75% of DSMT participants, frequency and percentage who report daily performance of SMBG and foot care; and range, percentage, and A1C mean value compared to baseline.</p>	<p>At 3-month follow-up, 89% of participants (n=9) self-reported daily performance of SMBG and foot care. When compared to baseline, available A1C levels (n=6) reduced for 83% of participants (range 0.1 to 5.3%, mean 1.9%); and increased for 17% of participants (1.3%). 50% of participants met goal of A1C reduction of 0.5 to 1.0% from baseline, but remaining 50% remained in glycemic control.</p>

10. a. By May 1, 2018, CQI program demonstrates 80% of DSMT participants receive follow-up, and annual eye and foot exams; and demonstrate A1C reductions.	Descriptive statistics: With the goal of 80% of DSMT participants, frequency and percentage who receive follow-up plans for diabetes self-management support, and annual eye and foot exams; and A1C range, percentages, and mean when compared to baseline.	On track to fulfill this outcome in 2018

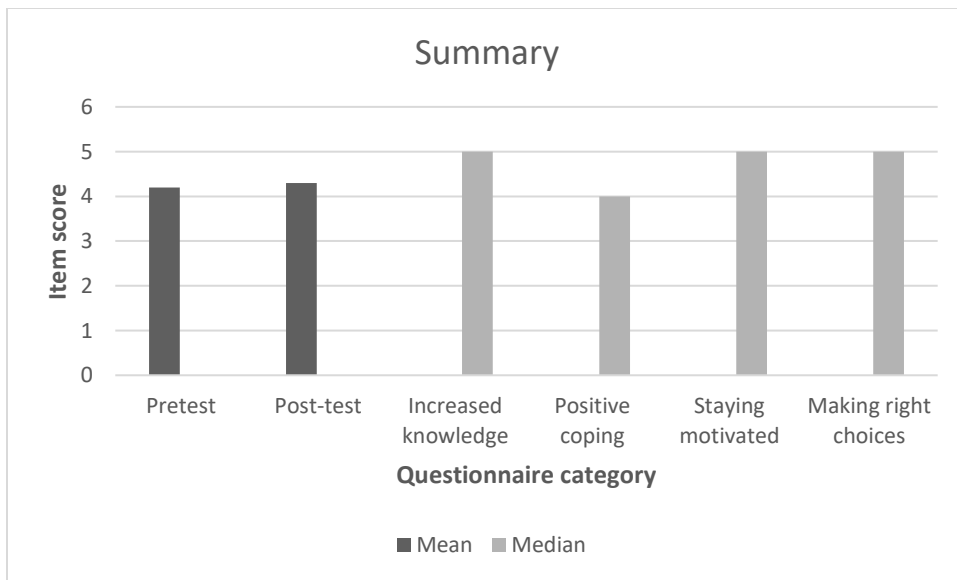
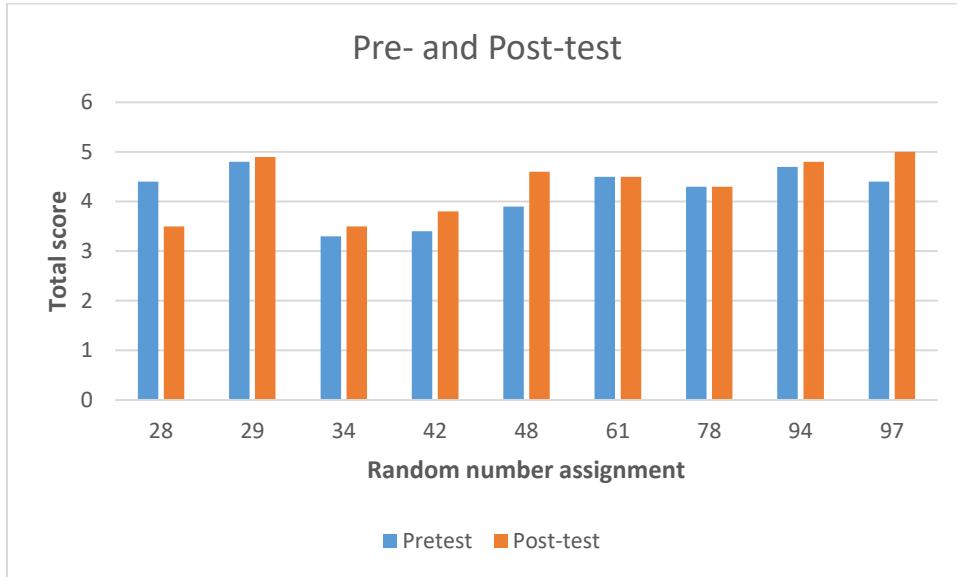
Appendix X

Data Table: Summary of Diabetes Self-management Training Demographics

Random number assignment	Age	Gender	Ethnicity	Marital Status	Years of education	Employment status	Years since diabetes diagnosis	Recent A1C	Oral meds	Injectable meds
28	74	Male	White	Married	16	Full time	6	6.9	1	0
29	52	Female	White	Married	13	Full time	0.17	6.9	1	0
34	33	Female	White	Married	--	Disabled	13	7.2	2	2
42	50	Female	White	Married	14	Retired	0.75	7.3	1	0
48	57	Male	Hispanic	Married	--	Full time	1	12.0	2	0
49	49	Female	White	Divorced	12	Disabled	8	7.7	2	2
61	47	Female	Asian	Married	16	Full time	1	6.3	2	0
78	79	Female	White	Divorced	16	Retired	25	8.5	2	1
94	79	Female	White	Married	13	Retired	8	6.0	0	2
97	65	Female	White	Divorced	14	Retired	0.02	10.0	2	0
	Mean 58.4 years	Male 2 Female 8	Asian 1 Hispanic 1 White 8	Married 7 Divorced 3	Mean 14.3 years	Full time 4 Retired 4 Disabled 2	Mean 6.3 years	Mean 7.9%	9 patients	4 patients

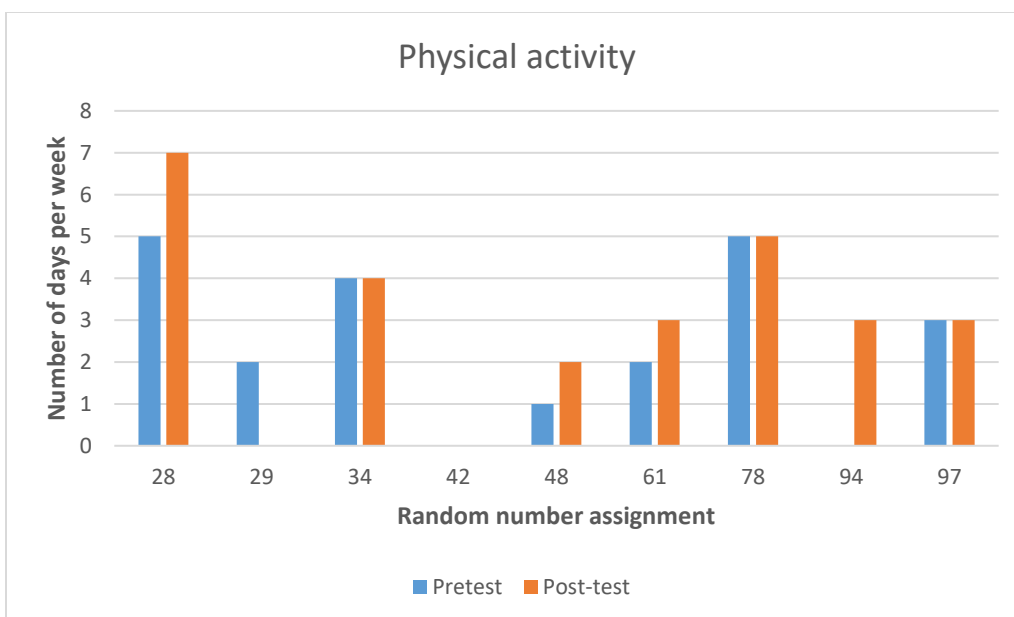
Appendix Y

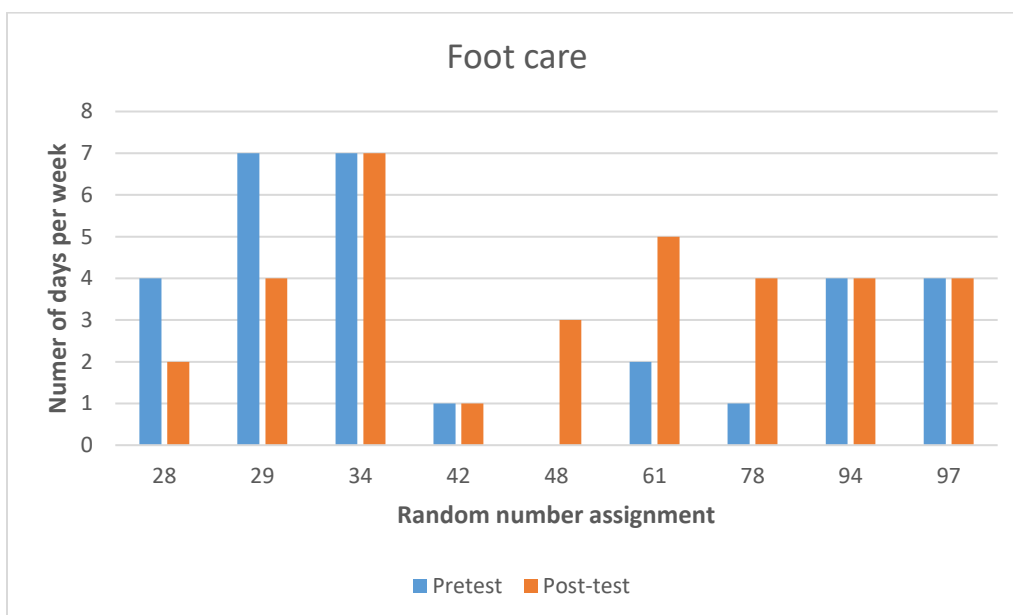
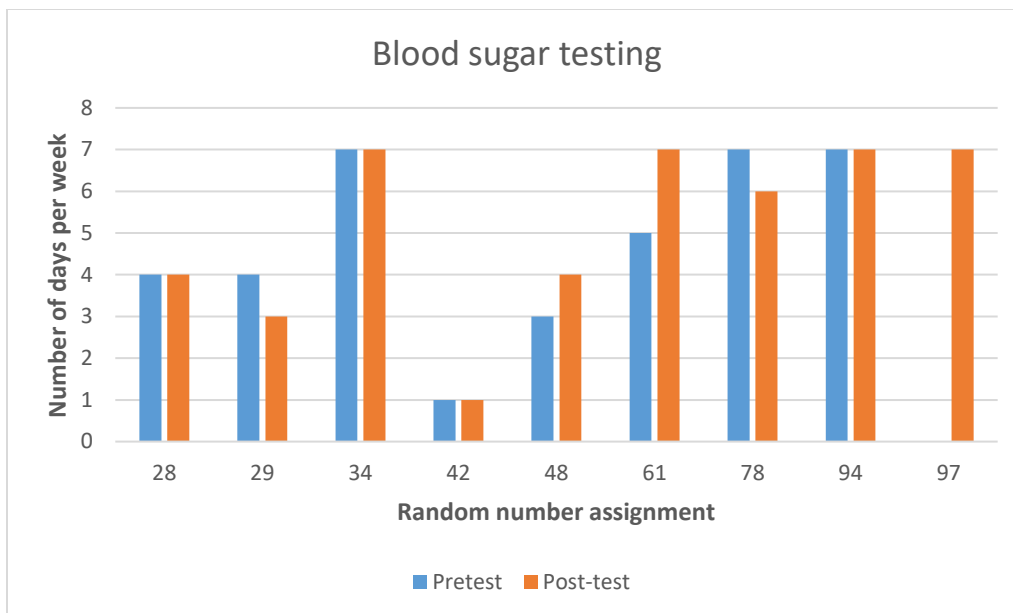
Data Tables: Diabetes Empowerment Scale-Short Form[®] (DES-SF)

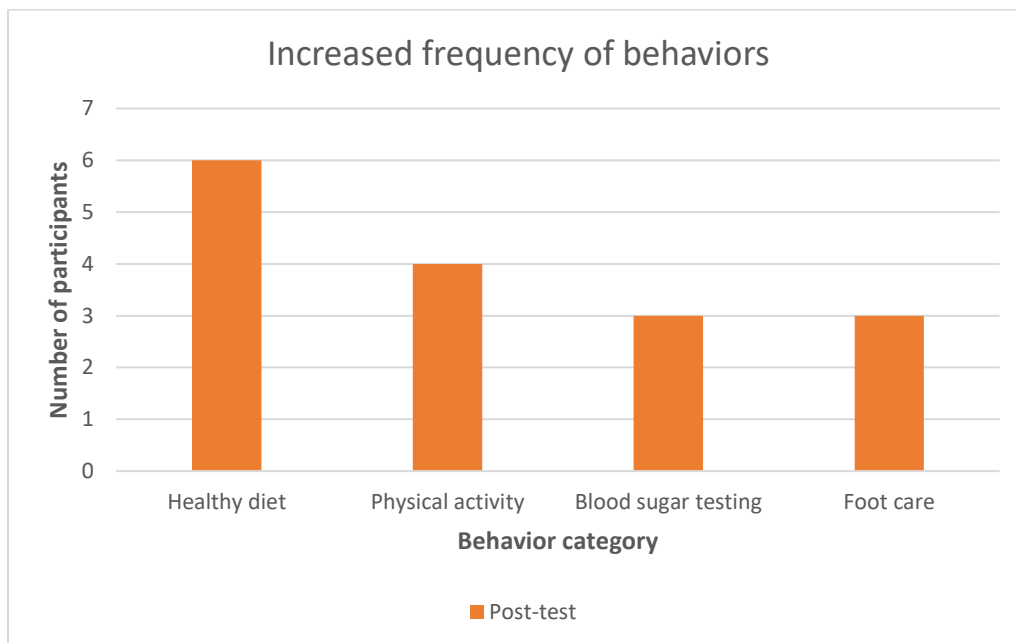
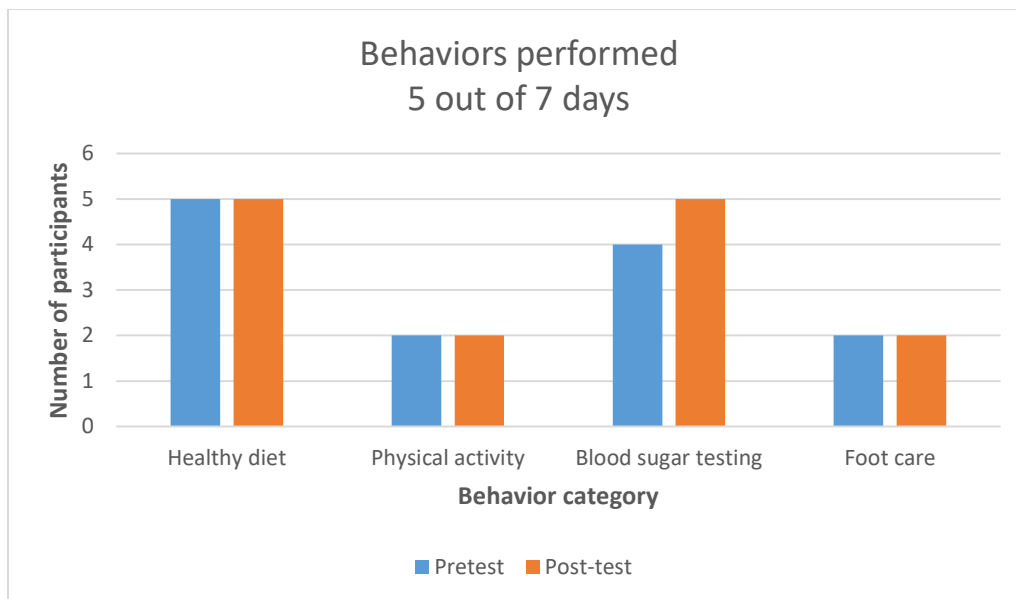


Appendix Z

Data Tables: Summary of Diabetes Self-Care Activities Questionnaire (SDSCA)







Appendix AA

Data Table: Participant Survey

(n=9)		1	2	3	4	5
1	The training sessions lived up to my expectations. → 5 = 89% (n=8)				28	29 34 42 48 61 78 94 97
2	The content of the training sessions is relevant to my diabetes goals. → 5 = 89% (n=8)			28		29 34 42 48 61 78 94 97
3	The in-class activities stimulated my learning. → 5 = 78% (n=7)				28 42	29 34 48 61 78 94 97
4	The pace of these sessions is appropriate. → 5 = 89% (n=8)			28		29 34 42 48 61 78 94 97
5	The training location is comfortable. → 5 = 78% (n=7)			42	28	29 34 48 61 78 94 97
6	The instructor was professional and courteous. → 5 = 100% (n=9)					28 29 34

						42 48 61 78 94 97+
7	The information presented on diabetes self-management increased my awareness of how to live a healthier life. → 5 = 89% (n=9)				28	29 34 42 48 61 78 94 97+
8	...I would highly recommend these training sessions to a friend. → 5 = 100% (n=8)					29 34 42 48 61 78 94 97+
9	The teaching by the instructor was effective. → 5 = 100% (n=9)					28 29 34 42 48 61 78 94 97+
<p>Please describe any suggestions that you might have for improving the training sessions.</p> <ul style="list-style-type: none"> • Spend more time with meals • Talk little more about food carbs • The questions pertaining to personal medical information should be private • Very much helpful for me • I enjoyed all sessions and learned more than I anticipated • Thank you! • Loved the sessions • Sessions were informative and I always learned at least one new thing each time! 						
<p>Please describe the least valuable part of the training sessions.</p> <ul style="list-style-type: none"> • For me it was carb counting as I have done this for many years • All sessions were valuable 						

Appendix BB

Data Table: Stakeholder Survey

	(n=5)					
Why did you become involved in the project? <ul style="list-style-type: none"> • A requirement of my job • To provide leadership • I am interested in diabetes care • The work of this project may impact my organization • Community service • Other 	0	0	3 responses	2 responses	0	0
Please describe your overall satisfaction in working with the project	Very satisfied 5/100%	Satisfied 0	Neutral 0	Dissatisfied 0	None of the above 0	
How satisfied are you with each of the components of the project? (For each component, please check the <u>ONE</u> that best applies)	Very satisfied	Satisfied	Neutral	Dissatisfied	None of the above	
<ul style="list-style-type: none"> • Number of members • Meeting attendance • Agency partnerships • Motivation of members • Leadership within the group • Direction / mission of the group • Education of members • Local agency representation • Availability / accessibility of necessary information 	0 1 1 2 1 2 1 0 2	2 0 1 2 1 0 1 2 0	0 1 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0	
	Total = 10 94% when combined with Satisfied	Total = 6	Total = 1			

<p>Does the clinic have access to adequate amounts of unbiased, technical information regarding evidence-based diabetes care? What is the main source of this information?</p>	<p>Yes 5/100%</p>	<ul style="list-style-type: none"> American Diabetes Association Diabetes and you (Novo Nordisk booklet) Diabetes carb counting (Novo Nordisk booklet) Providers, patient info. 			
<p>Please rate how successful you feel the project has been at accomplishing the intended mission and objectives.</p>	<p>Very successful 5/100%</p>	<p>Successful 0</p>	<p>Neutral 0</p>	<p>Un-successful 0</p>	<p>Decline to answer 0</p>
<p>Please rank the following tasks as most important (1) to least important (5) to accomplishing the clinic's mission to become certified as a diabetes education center.</p> <ul style="list-style-type: none"> Drafting a plan Setting guidelines and advising the clinic toward completion of certification requirements Implementation of the project Monitoring the project Public education Other 	<p>Most important (1)</p> <p>2 2 2 3 1 0</p> <p>Total = 10 60% when combined with Successful</p>	<p>(2)</p> <p>1 1 2 0 1 0</p> <p>Total = 5</p>	<p>(3)</p> <p>0 1 1 2 0</p> <p>Total = 4</p>	<p>(4)</p> <p>1 1 0 1 0 0</p> <p>Total = 3</p>	<p>Least important (5)</p> <p>1 1 0 0 1 0</p> <p>Total = 3</p>
<p>What is the clinic's major unmet need in providing diabetes care?</p>	<ul style="list-style-type: none"> Nutrition/diet plan Introduction to diabetes and daily life style Maybe some patients are no actively participating in one of those diabetes classes None N/A 				
<p>Please include additional comments here.</p> <ul style="list-style-type: none"> Patient compliance is most important 					

Appendix CC
Scholarly Project IRB Letter of Determination



BOISE STATE UNIVERSITY
RESEARCH AND ECONOMIC DEVELOPMENT
Research Compliance

Date: March 13, 2017

To: Sara Ahten

cc: Bonnie Clark

From: Social & Behavioral Institutional Review Board (SB-IRB)
c/o Office of Research Compliance (ORC)

Subject: SB-IRB Notification of Approval - Original - 187-SB17-042
Improving Care for Adult Patients with a History of Poor Glycemic Control

The Boise State University IRB has approved your protocol submission. Your protocol is in compliance with this institution's Federal Wide Assurance (#0000097) and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46).

Protocol Number: 187-SB17-042	Received: 2/26/2017	Review: Expedited
Expires: 3/12/2018	Approved: 3/13/2017	Category: 7

Your approved protocol is effective until 3/12/2018. To remain open, your protocol must be renewed on an annual basis and cannot be renewed beyond 3/12/2020. For the activities to continue beyond 3/12/2020, a new protocol application must be submitted.

ORC will notify you of the protocol's upcoming expiration roughly 30 days prior to 3/12/2018. You, as the PI, have the primary responsibility to ensure any forms are submitted in a timely manner for the approved activities to continue. If the protocol is not renewed before 3/12/2018, the protocol will be closed. If you wish to continue the activities after the protocol is closed, you must submit a new protocol application for SB-IRB review and approval.

You must notify the SB-IRB of any changes to your approved protocol and the committee must review and approve these changes prior to their commencement. You should also notify the committee if your activities are complete or discontinued.

Current forms are available on the ORC website at <http://eoo.si/D2FYTY>

Please direct any questions or concerns to ORC at 426-5401 or humansubjects@boisestate.edu.

Thank you and good luck with your research.

1910 University Drive Boise, Idaho 83725-1139
Phone (208) 426-5401 orc@boisestate.edu

This letter is an electronic communication from Boise State University.

Appendix DD
Scholarly Project Expense Report

Source of Expense	Expense Description	Dollar Value	Type of Cost (fixed or variable)	Description of Cost	Estimated Volume	Expense Per Unit
Advisory Group Meetings		Cost (\$)				
Administrative Supplies & Support	Printing costs and refreshments	\$53.50	Variable	Supplies	3	\$160
Rental of Meeting Room	Room rental at Lincoln Public Library	\$60.00	Fixed	Room rental rate	3	\$180
<i>In-kind Donation of Salary Hours</i>	<i>11 hours each of DNP student (DNP) at \$40.30/hour, Project Sponsor (PS) at \$52.00/hour, and Office Manager (OM) at \$34.00/hour</i>		Fixed	<i>Personnel salaries</i>	33 hours	(\$1389)
				<i>Fringe rate of 35% (DNP \$21.70/hour, PS \$18.09/hour, and OM \$11.97/hour)</i>	33 hours	(\$569)
Total Requested:						\$340
Work Group Meetings and Staff Training		Cost (\$)				
Clinic Supplies & Support	Printing costs per page – Work group and Office	\$0.03	Fixed	Supplies	300	\$9
	Printing costs per page – Staff education	\$0.26	Fixed			\$26
	Milestone luncheons	\$100	Variable	Luncheons	100	\$300
	Appreciation gifts	\$10	Fixed	Gifts	3	\$100
<i>In-kind Donation of Salary Hours</i>	<i>15 hours of DNP student (DNP) at \$40.30/hour; 11 hours of Project Sponsor (PS) at \$52.00/hour; and 13 hours each of Office Manager (OM) at \$34.00/hour, Referral Coordinator (RC) at \$18.64/hour, and</i>		Fixed	<i>Personnel salaries</i>	10	(\$2082)
				<i>Fringe rate of 35% (DNP \$21.70/hour, PS \$18.09/hour, OM \$11.97/hour, RC \$6.53/hour, and MA \$5.96/hour)</i>	65 hours	(\$869)

	<i>Medical Assistant (MA) at \$17.00/hour</i>					
	Total Requested:					\$435
Advertising		Cost (\$)				
Advertising	Printing costs per page	\$0.26	Fixed	Supplies	45	\$12
Travel	Posting of flyers in local community (3 cycles)	\$0.54	Fixed	Transportation	60 miles	\$32
<i>In-kind Donation of Salary Hours</i>	<i>3 hours of local newspaper editor at \$20.00/hour; and 6 hours of DNP student (DNP) at \$40.30/hour</i>		Fixed	<i>Personnel salaries</i>		<i>(\$302)</i>
				<i>Fringe rate of 35% (DNP \$21.70/hour)</i>		<i>(\$130)</i>
	Total Requested:					\$44
Diabetes Self-Management Training (DSMT)		Cost (\$)				
Communications	Phones and postage	\$50	Fixed	Communications		\$50
Supplies	Printing costs per page – DSMT curriculum	\$0.26	Fixed	Supplies	1800	\$468
	Printing costs per page – Surveys	\$0.03	Fixed		210	\$7
Travel	Participant binders	\$3.33	Fixed		30	\$100
	Teaching supplies	\$525	Fixed			\$525
	Mileage to and from clinic, public library, grocery store, and homes of participants unable to attend group sessions	\$0.54	Fixed	Transportation	174 miles	\$94
			Fixed	<i>Personnel salaries</i>	60 hours	<i>(\$2558)</i>
<i>In-kind Donation of Salary Hours</i>	<i>48 hours of DNP student (DNP) at \$40.30/hour; and 12 hours of Project Sponsor (PS) at \$52.00/hour</i>			<i>Fringe rate of 35% (DNP \$21.70/hour and PS \$18.09/ hour)</i>	60 hours	<i>(\$1259)</i>
	Total Requested:					\$1244

DSMT Assessment and Evaluation		Cost (\$)				
<i>In-kind Donation of Salary Hours</i>	Personnel time for data entry and analyses – 12 hours of DNP student (DNP) at \$40.30/hour		Fixed	<i>Personnel salary</i>	12 hours	(\$484)
			Fixed	<i>Fringe rate of 35% (DNP \$21.70/hour)</i>	12 hours	(\$260)
	Personnel time for DSMT follow-up and EHR documentation – 6 hours of DNP student (DNP) at \$40.30/hour; and 3 hours each of Project Sponsor (PS) at \$52.00/hour, Office Manager (OM) at \$34.00/hour, Referral Coordinator (RC) at \$18.64/hour, and Medical Assistant (MA) at \$17.00/hour		Fixed	<i>Personnel salary</i>	15 hours	(\$607)
			Fixed	<i>Fringe rate of 35% (DNP \$21.70/hour, PS \$18.09/hour, OM \$11.97/hour, RC \$6.53/hour, and MA \$5.96/hour)</i>	15 hours	(\$258)
	Total Requested:					
	Grand Total:					\$2063

Appendix EE

Scholarly Project 3- to 5-Year Budget Plan

Independent Evaluation of Progress (IEP)						
Revenues	Budget Year 1	Budget Year 2	Budget Year 3	Budget Year 4	Budget Year 5	Rationale
<i>In-kind Donation of Project Funds</i>	\$2063 (20 patients)	0 (20 patients)	0	0	0	1st year Pilot Project; 2nd year CMS Certification Process
CMS Reimbursement for Diabetes Self-Management Training (DSMT) (\$15.24 per 30-minute increments x 4-hour cycle)	0	0	\$1951 (16 patients)	\$1463 (12 patients)	\$1463 (12 patients)	Years 3-5 CMS Reimbursement
Advisory Group Meetings - <i>In-kind Donation of Salaries [11 hours each of DNP student (DNP) at \$40.30/hour, Project Sponsor (PS) at \$52.00/hour, and Office Manager (OM) at \$34.00/hour]</i>	\$1389	\$522	\$258	\$262	\$266	1st year DNP student (DNP), Project Sponsor (PS), & Office Manager (OM); Years 2-5 Program Coordinator (PC) & OM
- <i>In-kind Donation of Benefits at 35% fringe rate (DNP \$21.70/hour, PS \$18.09/hour, and OM \$11.97/hour)</i>	\$569	\$183	\$90	\$91	\$92	
Work Group Meetings and Staff Training - <i>In-kind Donation of Salaries [15 hours of DNP, 11 hours of PS; and 13 hours each of OM and 2 Medical Assistants (MAs) at \$17.00/hour]</i>	\$2061	\$729	\$0	\$0	\$0	1st year DNP, PS, OM, & 2 Medical Assistants (MAs); 2nd year PC, OM, & 2 MAs
- <i>In-kind Donation of Benefits at 35% fringe rate (DNP, PS, OM, and MAs at \$5.96/hour)</i>	\$859	\$258	\$0	\$0	\$0	
Continuous Quality Improvement Meetings - <i>In-kind Donation of Salaries (6 hours each of PC, OM, & 2 MAs)</i>	\$0	\$0	\$730	\$742	\$752	Years 3-5 PC, OM, & 2 MAs

- <i>In-kind Donation of Benefits at 35% fringe rate</i>	\$0	\$0	\$258	\$262	\$266	
DSMT Sessions						
- <i>Data Entry & Analyses (In-kind donation of 12 DNP salary hours plus 35% fringe rate)</i>	\$744	\$0	\$0	\$0	\$0	1st year DNP
- <i>DSMT Follow-up and EHR Documentation [In-kind donation of salary hours plus 35% fringe rate for DNP (6 hours); and 3 hours each of PS, OM, and 2 MAs]</i>	\$85	\$950	\$951	\$966	\$979	1st year DNP, PS, OM, & 2 MAs; Years 2-5 PC, OM, & 2 MAs
- <i>In-kind Donation of Salaries (DNP 48 hours)</i>	\$1934	\$2526	\$2529	\$2569	\$2605	1st year DNP; Years 2-5 PC
- <i>In-kind Donation of Benefits at 35% fringe rate (DNP)</i>	\$1042	\$880	\$881	\$895	\$908	
Advertising						
- <i>In-kind Donation of Salaries (DNP 6 hours & local newspaper editor 3 hours at \$20.00/hour)</i>	\$302	\$251	\$251	\$255	\$259	1st year DNP & local newspaper editor; Years 2-5 PC & local newspaper editor
- <i>In-kind Donation of Benefits at 35% fringe rate (DNP)</i>	\$130	\$73	\$73	\$74	\$75	
Revenue Total	\$11,951	\$6372	\$7972	\$7579	\$6345	

Expenses						
Advisory Group Meetings (each year)	\$2298	\$935	\$463	\$470	\$477	1st year x3, 2nd year x2, & Years 3-5 x1 meeting
- Printing Costs & Refreshments	\$160	\$108.50	\$54.20	\$55.05	\$55.91	
- Room Rental	\$180	\$121.68	\$60.78	\$61.74	\$62.70	
- Salaries [11 hours each of DNP student (DNP) at \$40.30/hour, Project Sponsor (PS) at \$52.00/hour, and Office Manager (OM) at \$34.00/hour]	\$1389	\$522	\$258	\$262	\$266	
- Benefits at 35% fringe rate (DNP \$21.70/hour, PS \$18.09/hour, and OM \$11.97/hour)	\$569	\$183	\$90	\$91	\$92	
Work Group Meetings and Staff Training (Years 1 & 2)	\$3355	\$1103	\$116	\$117	\$119	1st year x11; Years 2-5 x4 meetings
- Printing Costs	\$35	\$14.20	\$14.18	\$14.41	\$14.63	
- Milestone Luncheons	\$300	\$101.40	\$101.30	\$102.90	\$104.50	1st year x3; Years 2-5 x1 luncheon
- Appreciation Gifts x 10 (Year 1)	\$100	\$0	\$0	\$0	\$0	
- Salaries [15 hours of DNP, 11 hours of PS; and 13 hours each of OM and 2 Medical Assistants (MAs) at \$17.00/hour]	\$2061	\$729	\$0	\$0	\$0	
- Benefits at 35% fringe rate (DNP, PS, OM, and MAs at \$5.96/hour)	\$859	\$258	\$0	\$0	\$0	
Continuous Quality Improvement Meetings (Years 3, 4, & 5)	\$0	\$0	\$1097	\$1115	\$1131	Years 3-5 x4 meetings & x1 luncheon
- Printing Costs	\$0	\$0	\$8.10	\$8.23	\$8.36	
- Celebration Luncheons	\$0	\$0	\$101.30	\$102.90	\$104.50	
- Salaries (6 hours each of PC, OM, & 2 MAs)	\$0	\$0	\$730	\$742	\$752	

- Benefits at 35% fringe rate	\$0	\$0	\$258	\$262	\$266	
DSMT Sessions (each year)	\$5822	\$5180	\$5092	\$5083	\$5155	1st year x3 DSMT cycles;
- Communications	\$50	\$50.70	\$50.65	\$51.45	\$52.25	Years 2-5 x4 DSMT cycles
- Printing Costs	\$475	\$370.11	\$295.80	\$225.35	\$228.86	
- Supplies	\$625	\$375.18	\$360.80	\$351.92	\$357.39	
- Travel	\$94	\$27.38	\$24.07	\$24.45	\$24.83	
- Data Entry & Analyses (12 DNP salary hours plus 35% fringe rate)	\$744	\$0	\$0	\$0	\$0	
- DSMT Follow-up and EHR Documentation [Salary hours plus 35% fringe rate for DNP (6 hours); and 3 hours each of PS, OM, and 2 MAs]	\$858	\$950	\$951	\$966	\$979	
- Salaries (DNP 48 hours)	\$1934	\$2526	\$2529	\$2569	\$2605	
- Benefits at 35% fringe rate (DNP)	\$1042	\$880	\$881	\$895	\$908	
Advertising (each year)	\$476	\$355	\$355	\$360	\$366	1st year x3 cycles; Years 2-
- Printing Costs	\$12	\$9.13	\$9.12	\$9.26	\$9.41	5 x2 cycles
- Travel	\$32	\$21.90	\$21.88	\$22.23	\$22.57	
- Salaries (DNP 6 hours & local newspaper editor 3 hours at \$20.00/hour)	\$302	\$251	\$251	\$255	\$25	
- Benefits at 35% fringe rate (DNP)	\$130	\$73	\$73	\$74	\$75	
Expenses Total	\$11,951	\$7573	\$7123	\$7145	\$7248	
Operating Income	\$0	- \$1201	\$849	\$434	\$417	