

Winter 12-2017

CNL as Educator: Justifying the Need for a Certified Diabetes Educator on the Medical Surgical/Telemetry Unit

Livneet K. Takhar

University of San Francisco, liv.takhar@gmail.com

Follow this and additional works at: <http://repository.usfca.edu/capstone>

Recommended Citation

Takhar, Livneet K., "CNL as Educator: Justifying the Need for a Certified Diabetes Educator on the Medical Surgical/Telemetry Unit" (2017). *Master's Projects and Capstones*. 607.
<http://repository.usfca.edu/capstone/607>

This Project/Capstone is brought to you for free and open access by the Theses, Dissertations, Capstones and Projects at USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. It has been accepted for inclusion in Master's Projects and Capstones by an authorized administrator of USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. For more information, please contact repository@usfca.edu.

CNL as Educator: Justifying the Need for a Certified Diabetes Educator on the Medical

Surgical/Telemetry Unit

Livneet Takhar

University of San Francisco

August 2, 2017

Clinical Leadership Theme

This practice improvement project focuses on addressing gaps in type 2 diabetes mellitus education and team care for patients. The clinical nurse leader (CNL) will function as an educator and clinician by integrating tasks of a certified diabetes educator (CDE). The CNL will demonstrate the need for better outcomes through patient education on the medical surgical/telemetry unit. To provide proper teaching, the CNL/CDE will also act as an advocate and educator to explain complex disease processes and complications of this costly, chronic illness to a cohort of admitted patients with a diagnosis of diabetes.

Statement of the Problem

Diabetes is a growing problem in today's population. In the year 2014, 22 million Americans had diabetes (Centers for Disease Control and Prevention, 2015). As of 2015, 30.3 million Americans have the disease (CDC, 2017). A large portion of the population of patients seen in the medical surgical/telemetry microsystem has diabetes and would benefit from better education. Diabetes is a complex, chronic disease, which requires personalized and self-management education. Currently, there is no formal inpatient diabetes education program in place in this microsystem. If the doctor orders a patient to receive diabetes education, a nutritionist will review diet and a pharmacist will engage patients to understand management of medications. There is no teaching about other aspects of diabetes self management, such as lifestyle modification and prevention of complications. The purpose of this project is to justify the need for a certified diabetes educator who is dedicated to the microsystem. The gap analysis has reinforced the need for more dedicated resources to address diabetes care management.

Project Overview and Methodology

Microsystem Assessment

The site for this improvement project is a small, rural community hospital in a fifty-four-bed medical surgical/telemetry microsystem. This unit is the largest in the hospital and admits patients with a wide range of diagnoses. Renal, pulmonary, gastrointestinal, orthopedic, and pediatric are a few of the subgroups of patients commonly admitted on the unit. The professional team on this unit include: registered nurses, pharmacists, physicians, respiratory, physical, occupational and speech therapists, a dietician, nursing assistants, and unit clerks. Many staff members have worked at this facility for a long time and they are willing to provide help to others. Therefore, there is an excellent sense of teamwork and a culture of learning exists in this microsystem. The microsystem is set up as two separate units with two nurses' stations. The medical surgical/telemetry unit occupies a majority of the second floor. There are usually two charge nurses for each side of this unit. Unless census is below a certain number, then one charge nurse oversees care delivery. The patient to nurse ratio for this unit is four to one for telemetry patients. For medical surgical patients, the ratio is mostly four to one as well, but if it deemed necessary, it will change to five to one.

The Nurse as Educator

Nurses on this unit are responsible for providing patients with education on many health issues. For example, they provide education on Methicillin-resistant *Staphylococcus aureus* (MRSA) infections, congestive heart failure (CHF), and diabetes mellitus. Since nurses on the unit are overwhelmed by a variety of tasks, teaching is not as effective or efficient as it could be. Patients are usually given printouts, booklets, and pamphlets that are available on the unit. However, in depth education is not provided or available due to time constraints and perceived

understaffing. On discharge, the pharmacist and nutritionist provide diabetes education to some patients. However, this teaching does not include all components of diabetes management.

The proposed improvement project is focused on introducing the medical surgical/telemetry unit to the role of a certified diabetes educator (CDE) and how it can improve outcomes, decrease readmissions and prevent long term complications. The first step in this process was to determine what the CDE needed to include in diabetes teaching. The American Diabetes Association (ADA) provides an algorithm for what should be included in order to provide effective diabetes self-management education for patients with type 2 diabetes. The diabetes self-management education algorithm action steps can be located in appendix A. These guidelines were utilized when developing a lesson plan for a CNL education session. The topics in the teaching included managing blood sugar, hyperglycemia, hypoglycemia, improving diet control, physical activity, and preventing complications. This information was developed in a standardized PowerPoint presentation, adapted from the CDC. However, since there was no way to project the PowerPoint slides in the patients' rooms, the slides were printed out and given to patients to keep.

Learning Theory

When preparing lesson plans, the cognitive learning theory was utilized as well. The cognitive learning theory focuses on what goes on inside the mind of the learner. In addition, the goals and expectations of the learners are considered (Braungart, Braungart, and Gramet, 2008). Some principles from the cognitive learning theory that foster effective learning include: gaining the learner's attention, stimulating the learner's recall of prior learning, providing guidance to facilitate understanding, allowing learner to demonstrate learning, giving feedback to learner,

and helping learner retain information. This information was useful when planning out how to present information to patients and assess the recall of knowledge and skills.

CNL as Educator

After creating a lesson plan, patients were chosen as participants to receive diabetes education. The inclusion criteria were patients, or families of patients, with type 2 diabetes who spoke English. Patients with newly diagnosed diabetes were prioritized. However, this limited the sample size. Therefore, patients who were not controlling their blood sugars well or had a hemoglobin A1C of 6.5% or higher were also included. In this pilot, patients were excluded if English was not their native language or if they were confused or had no family or caregiver. Prior to initiating the education sessions, patients were given a twelve-question pretest to test their knowledge of diabetes management. After the pretest, a thirty-minute education session was conducted with the patient. A posttest was given after the session to evaluate if the teaching was effective. The two test scores were compared to determine whether there was an increase or decrease in the scores. The diabetes pre/posttest can be found in appendix B. The prediction for this project was that the score on posttest would increase after the teaching sessions. For the teaching sessions provided by the CNL, specific objectives were also identified:

By the end of the teaching session, the patient will be able to:

1. List three signs and symptoms of hypoglycemia.
2. List three signs and symptoms of hyperglycemia,
3. Demonstrate how to administer insulin (if taking).
4. State three complications associated with diabetes.
5. Differentiate between rapid acting and long acting insulin.
6. Demonstrate how to check their blood sugar on a glucometer.

Aims

The improvement theme that guided this project was CNL as educator to address gaps in diabetes mellitus care. A global aim statement was also synthesized. The CNL aims to improve the delivery and content of diabetes mellitus education for patients in the medical surgical/telemetry unit. The process begins with identifying patients who qualify for diabetes education. This process ends with a certified diabetes educator completing an educational series with each patient and perhaps a family member. By working on this process, patients are expected to gain a better understanding of diabetes self-management, be able to identify signs and symptoms of hyperglycemia and hypoglycemia, and decrease the number of readmissions of patients with diabetes related complications. It is important to work on this now because we have identified a gap in the content of diabetes education provided to patients in this microsystem. This statement relates to the specific aim as well. After providing diabetes education by a CNL acting in the role of a certified diabetes educator, at least 80% of patients will demonstrate an improvement in their understanding of diabetes management by increasing their pre vs. posttest scores over an eight week period.

Change Theory

The change theory utilized in this project is Lippitt's theory. This theory consists of seven different phases. To begin with, phase one is to diagnose the problem. Phase two is to assess the motivation/capacity for change. Next, is to assess the change agent's motivation and resources. These three phases incorporate the assessment element of this theory. For this improvement project, a needs assessment was conducted to diagnose the problem and assess for necessary change. Phase four of Lippitt's theory is to select a progressive change objective. Phase five is to choose an appropriate role of the change agent. The CNL acted as the CDE in this project,

which is the change agent. Phase six is to maintain the change, which can be demonstrated by delivering diabetes education. The last and final phase is to terminate the helping relationship (Mitchell, 2013).

Rationale

Team Based Care and Needs Assessment

A needs assessment is the basis for improvement projects. Informational interviews were conducted with other departments in the hospital that are involved in the current diabetes education program and “clinic”. This included a nutritionist and pharmacist. The nutritionist is involved in teaching patients with diabetes about diet modification and carbohydrate counting. She stated that she believes there needs to be more education provided to patients about disease management. The teaching that she provides is not very detailed and only provides basic education about dietary management. She also stated that the hospital previously had a post discharge diabetes class, but it was cut due to low attendance rates. This observation will be more fully explored in the future.

The pharmacy department is also involved in providing diabetes education for patients. An informational interview was conducted with a pharmacist to gather more facts about their part in the process. The pharmacist stated that they have a diabetes clinic that patients are ordered to enroll in by a physician. When asked what this clinic involves, the pharmacist stated that they follow up with patients after they have been discharged. They do so by making follow up phone calls and asking them about their diabetes medications and how their blood sugar has been. The pharmacists are also given standing orders by the doctors to adjust the patients’ insulin doses based on glucose levels. In addition, patients are given the option to visit the clinic if they need assistance. However, this clinic is mostly a telephonic outreach system. Clearly, there is a

need for inpatient diabetes education. If there is a certified diabetes educator available in the microsystem, the patient can receive all parts of diabetes education by one person while they are in the hospital. In addition, the education they receive will be one on one, allowing them to ask questions and fully understand the concepts.

Cost Analysis

To justify a new CDE position, a cost analysis was completed. The cost analysis compared expenses of hiring a new FTE CDE to inpatient admission costs for patients with diabetes. Introducing a CDE position would benefit the microsystem and costs significantly less than inpatient days for patients with diabetes (CDC, 2014). The development of a new CDE position is predicted to decrease diabetes-related hospital readmissions. This will decrease inpatient costs, therefore justifying the need for a CDE position in the microsystem. The cost benefit analysis is located in Appendix C, Cost Analysis.

In addition, a SWOT analysis further demonstrated the benefits of having a CDE in the microsystem. A CDE can provide personalized diabetes self-management education to patients. In addition, a single individual delivers education, rather than multiple different providers. A CDE position has the opportunity to decrease readmission rates, improve patient outcomes and satisfaction. The SWOT is located in appendix D, titled SWOT Analysis. A root cause analysis was completed as well. Appendix E, Root Cause Analysis Diagram, displays this information. The issue is insufficient diabetes self-management education available for patients. Insufficient staffing, diabetes education delivery, and inadequate staff training on diabetes care management affect the problem. In addition, when completing an improvement project, stakeholders have a substantial role in its success. Staff nurses, patients, and administration are the main stakeholders

in this improvement project. Appendix F, Stakeholder Analysis, presents how the different stakeholders involved influence this project.

Literature Review

A review of the literature was conducted to evaluate the effects of diabetes education. The databases used to retrieve studies included: CINAHL, Scopus, and Google Scholar. Studies done in the past ten years and in the English language were included in the search. Keywords used to find articles included: “diabetes and education”, “certified diabetes educator and outcomes”, and “diabetes education”. There is a large number of studies done on diabetes education and patient outcomes, however it was difficult to locate articles that focused on inpatient education. Therefore, articles on outpatient and inpatient diabetes education were utilized in this literature review.

The literature review supported the use of diabetes self-management education in improving patient outcomes. In a study conducted in two primary care clinics in Buffalo, staff members acted as diabetes educators to physician-referred patients. In patients with poorly controlled diabetes ($A1C \geq 9$), A1C dropped from 11.3% to 9.6% in 12 months after receiving diabetes education. In addition, the researchers compared A1C level changes for patients who were seen by a diabetes educator and those who were not. Those who were not did not have a significant change in A1C (Kahn et al., 2012). This study focused on diabetes education in primary care settings. However, another study by Healy et. al (2013) looked at inpatient diabetes education and how it affected patient outcomes. This study placed emphasis on the frequency of readmission related to inpatient diabetes education. It was found that patients who were readmitted by 30 and 180 days were less likely to have had a diabetes education consult.

Diabetes Self Management

Diabetes self-management education can be presented in many different ways. A systematic review completed by Zhao, Suhonen, Koskinen, and Leino-Kilpi (2016) focused on multiple theory-based self-management interventions and their effect on patient outcomes. They concluded that these interventions improved HbA1C, self-efficacy, and diabetes knowledge. However, they were unable to determine which interventions used for teaching were most effective. Chvala, Sherr, and Lipman (2015) also conducted a systematic review to look at unique interventions used for diabetes education. They concluded that all types of diabetes self-management education (DSME) were helpful in improving A1C levels, but the most effective is including both individual and group education (combination). Eighty-six percent of interventions using combination DSME resulted in significant improvements in A1C.

Inpatient Diabetes Education

Locating studies on the effectiveness of inpatient diabetes education was important because that is the focus of this improvement project. Torimoto, Okada, Sugino, and Tanaka (2016) completed a retrospective study to evaluate continuous glucose monitoring and HbA1c 12 weeks after discharge for patients who received inpatient diabetes education. Continuous glucose monitoring allows patients and researchers to determine blood glucose levels throughout the day. The mean HbA1c for these patients at admission was 8.9%, 7.4% at four weeks after discharge, and 6.6% at 12 weeks after discharge. Therefore, inpatient diabetes education showed a significant improvement in glycemic control. While this study focused on the short-term effects of inpatient diabetes education, a study completed by Ko et al. (2007) focused on long-term effects. Patients were followed for more than four years after hospitalization. For patients who received inpatient education, the frequency of readmissions and HbA1C was lower. Although the

teaching was effective, Ko et al. found that the effectiveness on patient outcomes gradually decreased over time. Therefore, they recommended having follow up re-education programs every year.

Timeline

This project was started in June 2017 and will conclude at the end of July 2017. A Gantt chart can be found in appendix G. Some difficulties arose when finding patients to include in the sample. For example, the goal was to provide teaching to at least two patients daily. However, there were setbacks when patients refused to receive teaching. This altered the timeline and occasionally made it difficult to stay on track.

Expected Results/Nursing Relevance

The goal of the providing diabetes education to patients is to increase patient knowledge on disease management. Prior to starting this project, there were concerns from staff that patients do not get proper diabetes education when they need it. When the nutritionist is on vacation or sick, there is no one to speak to the patient about diet control and food choices. The only resource available is a phone education session from this microsystem's sister hospital. However, there is no face-to-face instruction being done at that time. For this project, the CNL expected patients to feel more comfortable with controlling their diabetes. In addition, the CNL expects test scores to improve after taking the posttest.

In summary, it would be beneficial for both nurses and patients to have a CDE available in the microsystem. Diabetes care management is complex and requires comprehensive education. A staff nurse, who is often responsible for providing diabetes education, does not have the necessary resources or time to provide sufficient information. A CDE is trained in diabetes care management and focuses only on diabetes education; therefore they will have

adequate time available for the patients. After completing this improvement project, the CNL observed that patients also found one on one education to be valuable. Patients stated that this teaching allowed them to better understand diabetes self-management. Education was presented to patients in a simple, yet thorough manner. The teaching also encouraged patients to discuss what they already know and reinforce their knowledge. In one on one education sessions, patients are allotted time to ask questions and understand teachings. Patient satisfaction and outcomes will likely improve with the utilization of a certified diabetes educator (CDE).

Conclusion

The results from this pilot improvement project demonstrate that diabetes self management education provided by a CNL taking on the role of a CDE, is associated with improvement in patients' knowledge and retention of disease information. This is clearly presented in the average scores on the pretest and posttest. The average percentage on the pretest was determined to be 66%. There was a 29% increase on the posttest average, which was found to be 95%. Results are presented in a line graph located in appendix H, Pre vs. Post Test Scores. In addition, the average percentage on the pre and posttest are organized into a bar graph, which can be found in appendix I, Average Percent Pre vs. Posttest. These results suggest that one on one education was beneficial in improving patients' understanding of diabetes self-management. The entire sample was noted to have an increase in their posttest score, further demonstrating the value of a certified diabetes educator in the microsystem.

By the end of the education sessions, 100% of patients were able to identify three signs and symptoms of hypoglycemia and hyperglycemia. In addition, patients were also able to identify three complications that could result from uncontrolled diabetes. Last, if the patient was on insulin, they were capable of demonstrating how to check their blood sugars on a glucometer

and administer insulin. These were the objectives identified prior to initiating the education sessions and they were all met by the completion of teaching. One on one diabetes education provided by a designated staff member allows patients to focus on the most important topics of diabetes self care. During education sessions, the CDE can assist the patient in learning by having them demonstrate or “teach-back” what was learned. The teach-back method confirms that the patient understands the concept (Xu, 2017). This method was successful during the teaching sessions provided in this project.

Recommendations

Additional projects can further warrant the need for a certified diabetes educator. The current learning needs assessment and financial impact estimation only included a sample of patients who spoke English. Therefore, a large portion of the population was excluded. For future projects, interpreter lines should be utilized to provide patients with diabetes care education. In addition, future projects should provide multiple education sessions to patients. For example, it would be beneficial to provide education over two days, instead of one. This prevents patients from feeling overwhelmed by large amounts of information in a short period of time. An additional recommendation to justify a diabetes educator role in this microsystem is for the CNL to take on the role of a CDE for a one-year pilot project. Based on the results, a business plan for a new FTE CDE is planned.

In conclusion, this project was able to identify an improvement in patients’ understanding of diabetes self care management. Patients found the education to be valuable and simple to understand. Staff nurses and physicians in the microsystem also found it useful to have a staff member available to provide teaching to their patients, especially when there was no nutritionist

available. Therefore, having a CDE in the microsystem would substantially benefit staff, patients, and family.

References

- American Diabetes Association. (2016). Carbohydrate counting. Retrieved from:
<http://www.diabetes.org/food-and-fitness/food/what-can-i-eat/understanding-carbohydrates/carbohydrate-counting/carbohydrate-counting.html?loc=ff-slabnav>
- American Diabetes Association (2016). Diabetes self-management education and support for adults with type 2 diabetes. Retrieved from:
<https://www.diabeteseducator.org/docs/default-source/practice/practice-resources/algorithm-action-steps.pdf?sfvrsn>
- Braungart, M., Braungart, R., & Gramet, P. (2008). Applying learning theories to healthcare practice. In *Nurse as Educator* (p.45-74). Burlington, MA: Jones and Bartlett.
- Centers for Disease Control and Prevention. (2014). Diabetes public health resource. Retrieved from: <https://www.cdc.gov/diabetes/statistics/dmfirst/fig2.htm>
- Centers for Disease Control and Prevention. (2017). Diabetes at work. Retrieved from: <https://www.cdc.gov/diabetes/diabetesatwork/lesson-plans/blood-sugar.html>
- Centers for Disease Control and Prevention. (2017). CDC Newsroom. Retrieved from: <https://www.cdc.gov/media/releases/2017/p0718-diabetes-report.html>
- Chrvala, C. A., Sherr, D., & Lipman, R. D. (2016). Diabetes self-management education for adults with type 2 diabetes mellitus: A systematic review of the effect on glycemic control. *Patient Education and Counseling*, 99(6), 926-943.
doi:10.1016/j.pec.2015.11.003
- Greiger, L. (2017). Diabetes pre and post test questions. Retrieved from:

- <https://news.nutritioneducationstore.com/diabetes-pre-and-post-test-questions/>
- Healy, S. J., Black, D., Harris, C., Lorenz, A., & Dungan, K. M. (2013). Inpatient diabetes education is associated with less frequent hospital readmission among patients with poor glycemic control. *Diabetes Care*, *36*(10), 2960-2967. doi:10.2337/dc13-0108
- Hospital Adjusted Expenses per Inpatient Day. (2017). Retrieved from <http://www.kff.org/health-costs/state-indicator/expenses-per-inpatient-day/?currentTimeframe=0&sortModel=%7B%22colId%22%3A%22Location%22%2C%22sort%22%3A%22asc%22%7D>
- Kahn, L. S., Tumieli-Berhalter, L., D'Aniello, R., Danzo, A., Fox, C. H., Taylor, ... Glick, M. (2011). The impacts of "growing our own". *The Diabetes Educator*, *38*(1), 86-93. doi:10.1177/01457217111427455
- Ko, S., Song, K., Kim, S., Lee, J., Kim, J., Shin, J., ... Ahn, Y. (2007). Long-term effects of a structured intensive diabetes education programme (SIDEPE) in patients with Type 2 diabetes mellitus—a 4-year follow-up study. *Diabetic Medicine*, *24*(1), 55-62. doi:10.1111/j.1464-5491.2007.02013.x
- Mitchell, G. (2013). Selecting the best theory to implement planned change. *Nursing Management*, *20*(1), 32-37. doi:10.7748/nm2013.04.20.1.32.e1013
- Torimoto, K., Okada, Y., Sugino, S., & Tanaka, Y. (2016). Determinants of hemoglobin A1c level in patients with type 2 diabetes after in-hospital diabetes education: A study based on continuous glucose monitoring. *Journal of Diabetes Investigation*, *8*(3), 314-320. doi:10.1111/jdi.12589
- Xu, P. (2012). Using teach-back for patient education and self-management. *American Nurse*

Today. 7(3)

Zhao, F., Suhonen, R., Koskinen, S., & Leino-Kilpi, H. (2016). Theory-based self-management educational interventions on patients with type 2 diabetes: a systematic review and meta-analysis of randomized controlled trials. *Journal of Advanced Nursing, 73(4)*, 812-833. doi:10.1111/jan.13163

Appendix A :

DIABETES SELF MANAGEMENT EDUCATION ALGORITHM ACTION STEPS

Diabetes Self-Management Education and Support for Adults with Type 2 Diabetes:
ALGORITHM ACTION STEPS

Four critical times to assess, provide, and adjust diabetes self-management education and support

AT DIAGNOSIS	ANNUAL ASSESSMENT OF EDUCATION, NUTRITION, AND EMOTIONAL NEEDS	WHEN NEW COMPLICATING FACTORS INFLUENCE SELF-MANAGEMENT	WHEN TRANSITIONS IN CARE OCCUR
PRIMARY CARE PROVIDER/ENDOCRINOLOGIST/CLINICAL CARE TEAM: AREAS OF FOCUS AND ACTION STEPS			
<ul style="list-style-type: none"> <input type="checkbox"/> Answer questions and provide emotional support regarding diagnosis <input type="checkbox"/> Provide overview of treatment and treatment goals <input type="checkbox"/> Teach survival skills to address immediate requirements (safe use of medication, hypoglycemia treatment if needed, introduction of eating guidelines) <input type="checkbox"/> Identify and discuss resources for education and ongoing support <input type="checkbox"/> Make referral for DSME/S and medical nutrition therapy (MNT) 	<ul style="list-style-type: none"> <input type="checkbox"/> Assess all areas of self-management <input type="checkbox"/> Review problem-solving skills <input type="checkbox"/> Identify strengths and challenges of living with diabetes 	<ul style="list-style-type: none"> <input type="checkbox"/> Identify presence of factors that affect diabetes self-management and attain treatment and behavioral goals <input type="checkbox"/> Discuss impact of complications and successes with treatment and self-management 	<ul style="list-style-type: none"> <input type="checkbox"/> Develop diabetes transition plan <input type="checkbox"/> Communicate transition plan to new health care team members <input type="checkbox"/> Establish DSME/S regular follow-up care
DIABETES EDUCATION: AREAS OF FOCUS AND ACTION STEPS			
<ul style="list-style-type: none"> Assess cultural influences, health beliefs, current knowledge, physical limitations, family support, financial status, medical history, literacy, numeracy to determine which content to provide and how: <input type="checkbox"/> Medication – choices, action, titration, side effects <input type="checkbox"/> Monitoring blood glucose – when to test, interpreting and using glucose pattern management for feedback <input type="checkbox"/> Physical activity – safety, short-term vs. long-term goals/recommendations <input type="checkbox"/> Preventing, detecting, and treating acute and chronic complications <input type="checkbox"/> Nutrition – food plan, planning meals, purchasing food, preparing meals, portioning food <input type="checkbox"/> Risk reduction – smoking cessation, foot care <input type="checkbox"/> Developing personal strategies to address psychosocial issues and concerns <input type="checkbox"/> Developing personal strategies to promote health and behavior change 	<ul style="list-style-type: none"> <input type="checkbox"/> Review and reinforce treatment goals and self-management needs <input type="checkbox"/> Emphasize preventing complications and promoting quality of life <input type="checkbox"/> Discuss how to adapt diabetes treatment and self-management to new life situations and competing demands <input type="checkbox"/> Support efforts to sustain initial behavior changes and cope with the ongoing burden of diabetes 	<ul style="list-style-type: none"> <input type="checkbox"/> Provide support for the provision of self-care skills in an effort to delay progression of the disease and prevent new complications <input type="checkbox"/> Provide/refer for emotional support for diabetes-related distress and depression <input type="checkbox"/> Develop and support personal strategies for behavior change and healthy coping <input type="checkbox"/> Develop personal strategies to accommodate sensory or physical limitation(s), adapting to new self-management demands, and promote health and behavior change 	<ul style="list-style-type: none"> <input type="checkbox"/> Identify needed adaptations in diabetes self-management <input type="checkbox"/> Provide support for independent self-management skills and self-efficacy <input type="checkbox"/> Identify level of significant other involvement and facilitate education and support <input type="checkbox"/> Assist with facing challenges affecting usual level of activity, ability to function, health benefits and feelings of well-being <input type="checkbox"/> Maximize quality of life and emotional support for the patient (and family members) <input type="checkbox"/> Provide education for others now involved in care <input type="checkbox"/> Establish communication and follow-up plans with the provider, family, and others

Rivers MA, Redberg J, Cooper M, Baker P, Funnell MM, Finkelstein EA, Maysky LA, Simonsen L, Wexler E. Diabetes Self-management Education and Support in Type 2 Diabetes: A Joint Position Statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics. *Diabetes Care* 2015; 38(12):1992-1996. The Diabetes Educator 33(3):411-443. *Journal of the Academy of Nutrition and Dietetics* 2015;15(12):1929-1934. (Adapted, Aug 2016)



American Diabetes Association (2016). Diabetes self-management education and support for adults with type 2 diabetes. Retrieved from: <https://www.diabeteseducator.org/docs/default-source/practice/practice-resources/algorithm-action-steps.pdf?sfvrsn>

Appendix B:

DIABETES PRE/POST TEST

Diabetes Pre and Post Test

1. Diabetes is a condition that is a result of:
 - a. being overweight
 - b. too much insulin
 - c. not enough insulin or insulin isn't working effectively
 - d. eating too much sugar and drinking sweetened beverages
 - e. eating fast foods and processed foods
 - f. I don't know
2. Diabetes occurs due to problems in which organ?
 - a. intestines
 - b. stomach
 - c. pancreas
 - d. gallbladder
 - e. I don't know
3. High blood sugar levels can cause:
 - a. increased thirst and urination
 - b. increased energy levels
 - c. weight gain
 - d. improved vision
 - e. I don't know
4. Losing weight may have which benefits for people with diabetes?
 - a. help the body use insulin more effectively
 - b. lower blood sugar levels
 - c. decrease the risk of heart disease
 - d. All of the above
 - e. I don't know
5. People with diabetes should NEVER eat or drink:
 - a. sweetened beverages like soda pop, sweetened iced tea, or juice drinks
 - b. any white-colored food
 - c. any type of fruit
 - d. pasta and rice
 - e. I don't know
6. When grocery shopping, a person with diabetes should:
 - a. buy only special diabetic foods
 - b. buy only foods labeled 'sugar-free'
 - c. avoid all foods that contain carbohydrate
 - d. read food labels to evaluate calorie, carbohydrate, and fat content of foods
 - e. I don't know
7. Well-managed diabetes decreases the risk of: (This question may have more than one correct answer.)
 - A. Kidney damage
 - B. Blindness

- C. Melanoma
- D. Heart disease
- E. Foot ulcers
- F. Unsure

8. How often should people with diabetes have their feet checked?(This question may have more than one correct answer.)

- A. At least once every year by a podiatrist or doctor
- B. The person should check their feet every day
- C. Only when they have painful feet
- D. Only when they have high blood glucose levels
- E. Unsure

9. How often should people with diabetes exercise or be physically active?

- A. Five days of the week for at least 30 minutes a day
- B. Once a week for at least 30 minutes
- C. Once a month for one hour
- D. At least every fortnight for two hours
- E. Unsure

10. Blood sugar is well controlled when Hemoglobin A1C is:

- A. Below 7%
- B. Between 12%-15%
- C. Less than 180 mg/dl
- D. Between 90 and 130 mg/dL

11. List 3 signs/symptoms of low blood sugar

12. List 3 signs/symptoms of high blood sugar

Greiger, L. (2017). Diabetes pre and post test questions. Retrieved from:
<https://news.nutritioneducationstore.com/diabetes-pre-and-post-test-questions/>

Appendix C:
 COST ANALYSIS

Cost of CDE/hour	\$33-\$44
Cost per inpatient day in hospital	\$3341
Average LOS of patient with diabetes related complication	5 days

CDC, 2014

Henry J. Kaiser Foundation, 2015

Cost of CDE salary/month:

33x (40hrs/week)= **\$5,120**

44x(40hrs/week)= **\$7,040**

One patient admitted with diabetes related complication:

3,341x 5 days= **\$16,705**

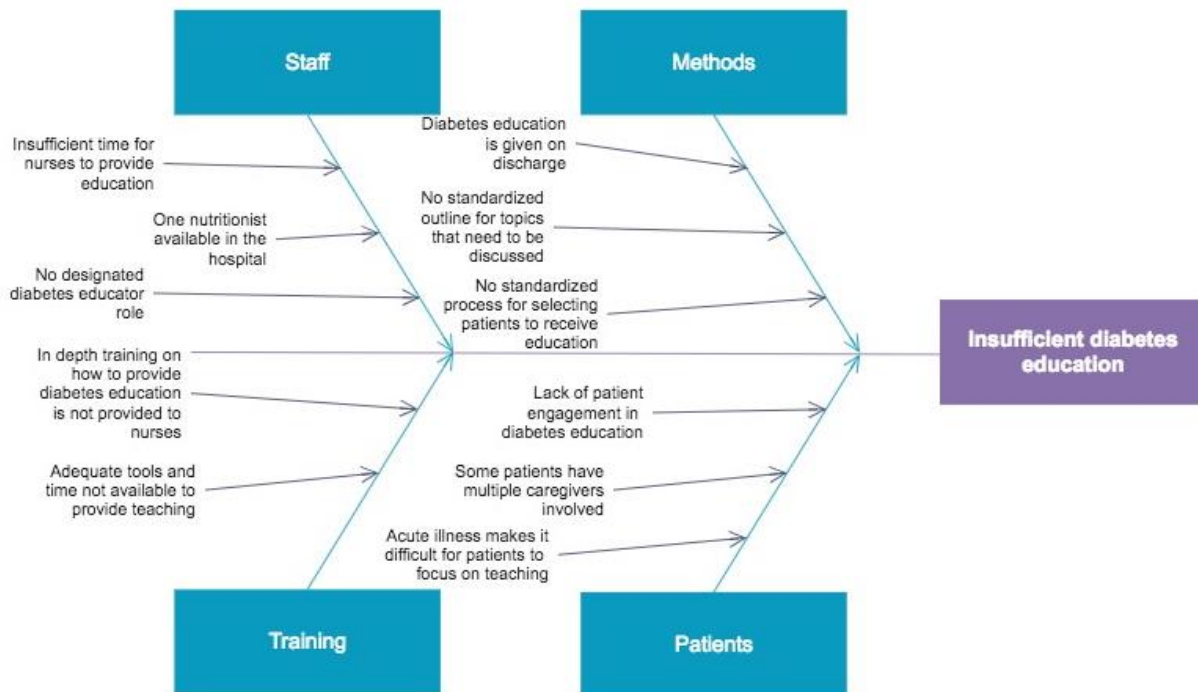
Source created by Livneet Takhar

Appendix D:
SWOT ANALYSIS

<p>Strengths</p> <ul style="list-style-type: none"> • Improve diabetes self management education for patients • Physician/staff support of a certified diabetes educator (CDE) • Dedicated staff to provide diabetes self management education 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Lack of functional CDE in the microsystem • Cost of implementing CDE in microsystem • Lack of patient adherence and motivation for diabetes education • Lack of support from management
<p>Opportunities</p> <ul style="list-style-type: none"> • Decrease in readmissions with diabetes related complications (decreased cost) • Increase in patient outcomes and understanding of disease management • Improved patient satisfaction 	<p>Threats</p> <ul style="list-style-type: none"> • Patient morbidity and mortality from poor diabetes self management education • Loss of hospital competitiveness in diabetes care management • Poor hospital consumer assessment of healthcare providers and systems (HCAHPS)

Source created by Livneet Takhar

Appendix E:
ROOT CAUSE ANALYSIS DIAGRAM



Source created by Livneet Takhar

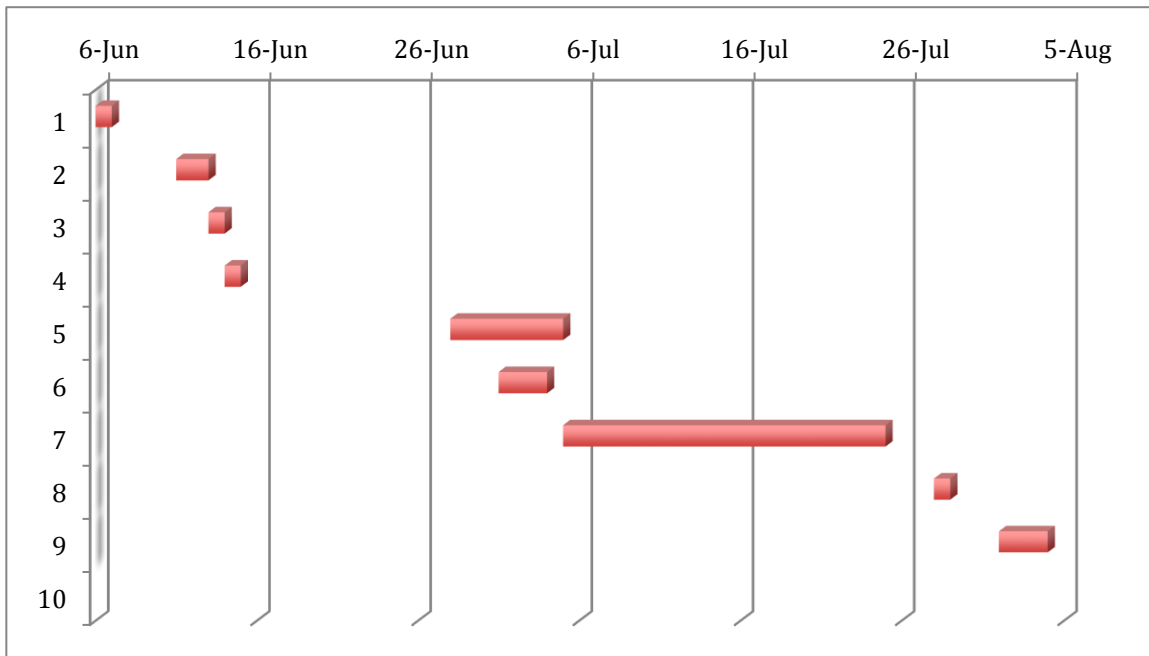
Appendix F:

STAKEHOLDER ANALYSIS

	Impact	Influences	What is the importance to the stakeholder ?	How could the stakeholder contribute to this project?	How could the stakeholder block this project?	Engaging stakeholder?
Patients	High	High	Help them better understand their diabetes.	Cooperate and participate-keep program going	No participation/not satisfied	Providing teaching in a way that is easily understood/interesting
Nurses	Medium	Medium	Decrease their workload and stress at work.	Provide input on what types of education patients need. Agree that better teaching in necessary	Not work with the CDE to coordinate teaching times	Provide them with benefits of implementing a CDE and how it will decrease their workload
Administration	High	Medium	Cost of implementing CDE. It will affect patient outcomes, satisfaction.	Provide funds to create a CDE position	Argue that we had a similar program in the past and it did not work. Say no to adding a CDE position	Describing to them the cost benefit of implementing a CDE. Decrease readmissions, or admissions of patient with diabetes related complications

Appendix G

GANTT CHART



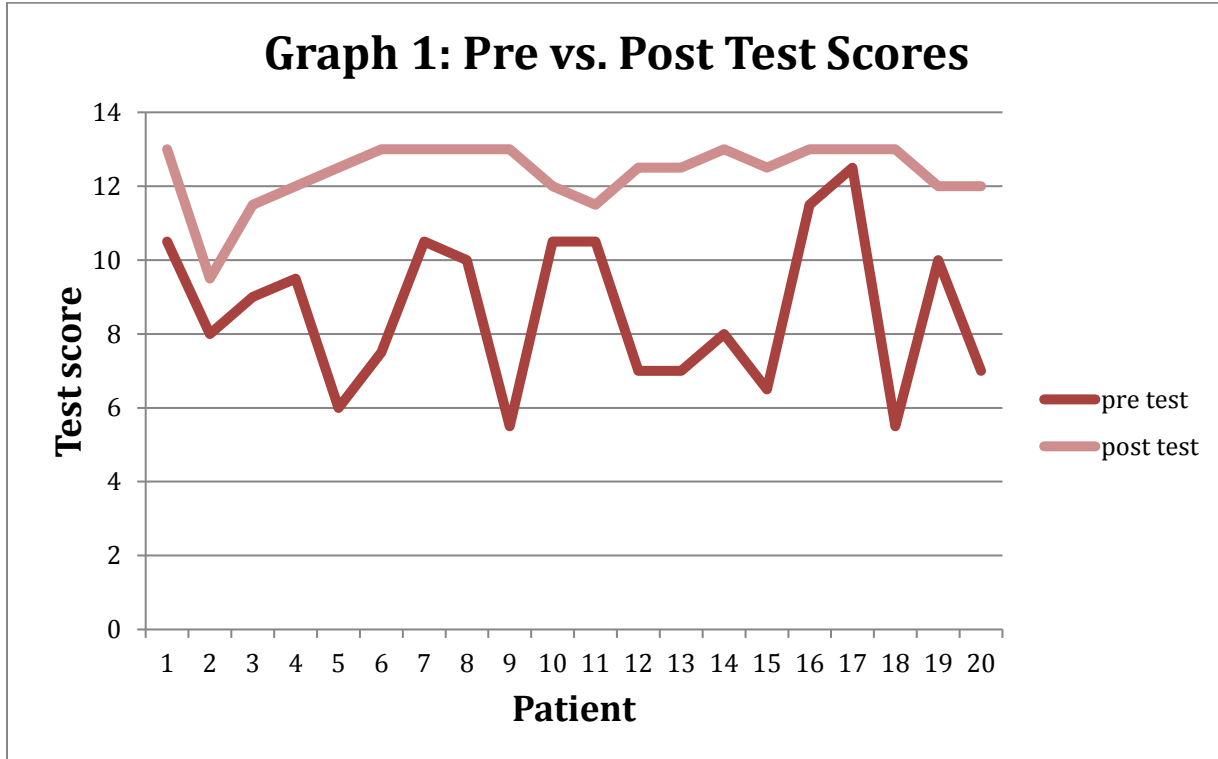
KEY

1	Create Gantt Chart
2	5 P assessment
3	Needs Assessment
4	Statement of determination submitted
5	Literature review completed
6	Lesson plan for teaching completed
7	Provide diabetes education in microsystem
8	Assess/analyze data
9	Complete prospectus and poster presentation

Source created by Livneet Takhar

Appendix H

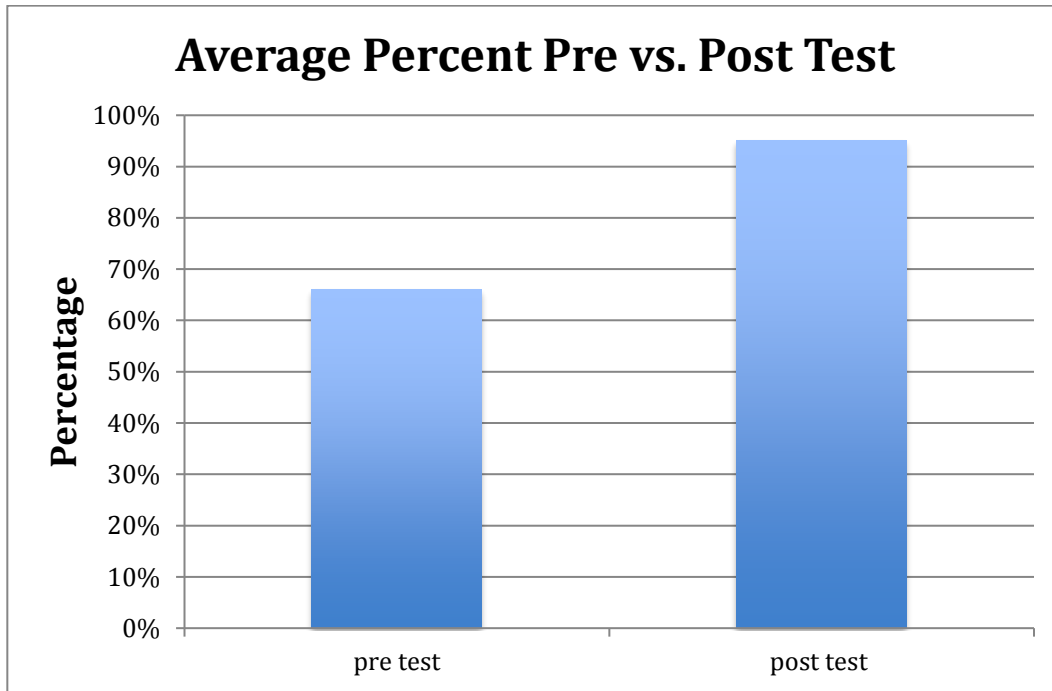
Graph 1: Pre vs. Post Test Scores



Source created by Livneet Takhar

Appendix I

Graph 2: Average Percent Pre vs. Post Test



Source created by Livneet Takhar