Fall 12-18-2015

Reduced A1C Levels Through Diabetes Self-Management Strategies in the Teen Population: A Systematic Review

Nicole O'Neil
University of San Francisco, nikkim817@hotmail.com

Reduced A1C levels Through Diabetes Self-Management Strategies in the Teen Population: A Systematic Review

Nicole O'Neil

University of San Francisco

Clinical Leadership Theme

The theme for improvement this project focuses on is effectiveness with knowledge management as the emphasis. The CNL role function is outcome manager. As one of the many CNL competencies set forth by the AACN, and as the CNL leading this project, one area of significance is to improve patient care by focusing on quality improvements, patient safety measures, and evidence-based nursing interventions. Several competencies are expected of the CNL to ensure such outcomes such as the following: use performance measures to assess and improve the delivery of evidence-based practices; participate in the design, delivery, and evaluation of clinical prevention and health promotion services that are patient centered and culturally appropriate; and lastly, use evidence in developing and implementing teaching and coaching strategies to promote and preserve health and healthy lifestyles in patient populations (AACN, 2013). As the CNL, I will be leading this project by using current evidence-based practices and research to improve the diabetes education in the adolescent population ages 15-18.

Statement of the Problem

Diabetes mellitus is the most common endocrine disease and one of the most common chronic conditions in children. In fact, about 208,000 young people in the US under age 20 had diabetes in 2012. (National Diabetes Educational Program, 2014). There are numerous complications that can result from unmanaged diabetes such as heart and blood vessel disease, diabetic ketoacidosis, coma, neuropathy, nephropathy, diabetic retinopathy, foot damage, skin infections, and even death. Typical adolescent lifestyle issues pose many challenges that are further complicated when teens have diabetes, and therefore, it is believed that this particular

population would most significantly benefit from improved patient education for better disease prevention strategies, disease management, and overall public health promotion interventions. Due to the complexity of this age group, there is a need for more evidence-based practices to be incorporated into the diabetes educational program that are centered around the adolescent population to allow for more effective diabetes teaching and disease management at home.

Project overview

We currently have an average A1C level of 8.1% with our type 1 diabetes adolescent population at Children's Hospital of Orange County (CHOC). According to the new guidelines set forth by the American Diabetes Association, it is now recommended for children under 19 years of age diagnosed with type 1 diabetes to strive to maintain an A1C level lower than 7.5% (ADA, 2014). Our goal is within 90 days to decrease this percentage from 8.1% to 7.9% after the new diabetes education program is initiated. Our objective is to create a revised diabetes handout to include the following topics: information for teen support groups; technology application resources to better track blood sugar levels, as well as nutritional intake; diet recommendations for teens with diabetes; ideas on food selection while eating out; tips for parents in preparing teen for independent living; the name of the certified diabetes educators at CHOC with their contact information; as well as tips for stress management for the adolescent population. The primary goals of the endocrine team is to lower the adolescent's A1C levels through a revised diabetes education plan.

We aim to improve the adolescence diabetes education in the 15-18 years of age population within the endocrine specialty clinic at CHOC. In order to integrate clinical prevention and population health promotion at CHOC, we feel this project can help to enhance the development of age-specific health education, communication strategies, and disease

management interventions in the outpatient setting. The process begins with the arrival of the adolescent patient for the initial appointment or follow up appointment in the clinic. The process ends with a quick recap and agenda review with the patient and reliable parties, as well as a scheduled follow up visit in 90 days for proper evaluation of expected outcomes. By working on this process, we expect the following: to more effectively monitor the outcomes of comprehensive care plans that address the health promotion and disease prevention of diabetes and the needs of this specific patient population; to increase adolescent compliance with diabetes management; to gain more patient and family understanding of diabetes education and expected outcomes; and to provide more realistic disease management strategies for this particular group of patients. It is important to work on this now because we have identified the need to improve patient safety and overall disease management curriculum; to create a more flexible, effective, and age-specific diabetes educational program; to instill time management and stress management skills for the adolescent population; and lastly, to offer more convenient technology applications to aid in diabetes management at home.

While keeping age specific factors in mind, we want to revise this process in the clinic setting to provide vocational counseling, appropriate diabetes education, involve more teens in support groups, increase self-reliance, and promote more accountability and independence. After implementation of new diabetes educational handout, our goal is to decrease the average A1C levels of the adolescent population ages 15-18 by 0.02% by January 2016 after the 90 day review is complete.

Rationale

To best identify the needs and factors leading to this initiative, a SWOT analysis and flowchart was incorporated into the microsystem assessment (see Appendix A). After

implementing a patient satisfaction survey in the endocrine specialty clinic at CHOC regarding patient and family satisfaction of diabetes education at follow up and initial visits, it became readily apparent that there is a need for education improvements. Such topics included in the survey that had low scores and caused dissatisfaction included the following: tools provided for disease management; information for technology services for diabetes management at home; resources available for support services in community; information on how to prepare your adolescent into transitioning to adulthood and/or independent living; diet recommendations for adolescents; and lastly, a simplified and user-friendly diabetes plan.

Based on a recent clinic audit conducted on September 1st, 2015, through the quality improvement team at CHOC, an A1C average of 8.1% with our type 1 and type 2 diabetes adolescent population was revealed. Through this audit, A1C levels were shown to be more controlled with the younger population ages 7-12 years of age and were consistently shown to be elevated with the 15-18 years of age patient population at CHOC. Also, the increase in A1C levels in the adolescent population has shown a gradual incline since 2014 when records were reviewed by the quality improvement team. As of last review, on September 14th 2015, the average A1C level for this specific population was 8.2%, which is a 0.1% increase since the beginning of this project.

According to CHOC's quality improvement analysis conducted in July of 2015, the number of diabetes-related ER visits at this children's hospital in this particular age group ranked highest in the hospital. In 2014, the hospital had 1,178 diabetes-related ER visits resulting in complications in this population at CHOC. In the endocrine clinic at CHOC, per month for diabetic adolescent patients, paid claims averaged $248.02, compared to $167.74 for patients without complications and without ER visits. The average cost of treating complications at

CHOC related to unmanaged diabetes, is an estimated $10,746 per hospitalization. The total number of adolescent hospitalizations at CHOC related to complications from diabetes between July 1st 2015-September 1st 2015 was 92 patients, according to CHOC quality improvement analysis. This is a total cost of $988,632 in just a short 60 days, which would cost the organization $5,931,792.00 in expenses if improvements aren't made. For cost savings analysis, refer to Appendix B.

Methodology

The objective of this project is to create a new revised diabetes educational handout to the adolescent population ages 15-18 to help reach the institution's goals of teen A1C reductions. To best incorporate change into practice, Lewin's Stages of Change, also known as the force field model of change, was utilized to implement this change in the clinic. This change theory has three stages: unfreezing, moving, and refreezing, with a focus on improving or strengthening those forces or factors that can support change and restraining those forces that interfere with change. By giving the team an opportunity for input and the autonomy to decipher their own attitudes and beliefs regarding quality improvements and how to change a practice for better patient care, the team felt more connected to the change, and more motivated to participate in this new practice within the clinic. Also, by working together, a shared vision of change was more easily established and could even be utilized in the future to strengthen the factors that support changes in this particular clinical microsystem. During the implementation phase, the team discussed what likely outcome would result if this problem isn't solved and if the change isn't implemented into practice. By discussing the alternative of not incorporating change, it helped remind the team of the overall vision of change and the team's previously discussed objectives and discussed goals.

The project has already been implemented with the revised diabetes educational program in the endocrine clinic. The project began by creating a revised diabetes educational brochure by staff including myself, my preceptor, all specialty team leaders, charge nurses, diabetes educators, and staff RNs. The brochure included the following topics: tools provided for disease management; information for technology services for diabetes management at home; resources available for support services in community; information on how to prepare your adolescent into transitioning to adulthood and/or independent living; diet recommendations for adolescents; and a simplified and user-friendly diabetes plan. The brochure was approved by the quality improvement team and implemented in practice last week. A staff meeting was coordinated the day before the brochure was implemented to review quality improvement measures and goals for this population of patients; goals for future A1C levels; data that led to this change; new information on the brochure; and what to expect in the clinic as a result of these changes. Also, a clinic in-service was conducted by the clinic's certified diabetes educators on basic teaching strategies for this population and methods to ensure teen compliance is maintained. Staff verbalized understanding of changes and purpose of this quality improvement measure and also had the opportunity to ask questions and address any concerns.

The data will be collected and analyzed by senior managers at the next CHNA scheduled for January 1st 2016 to see if the project was effective. In addition, CHOC's quality improvement team will be reevaluating the data collected by the endocrine specialty team at the next scheduled quarterly review in December 2015. The endocrine specialty managers will be collecting the following data at the next review: A1C levels for the adolescent population from September to December; patient/family survey and feedback questionnaires; and assessment findings gathered

at next patient follow up appointments, such as results of blood work and of blood sugars from home that were submitted to electronic data base.

Data Source

Both type 1 diabetes and type 2 diabetes are increasing in U.S. children and within the adolescent population, therefore, more education of disease management should be targeted towards this vulnerable group within the community (National Diabetes Educational Program, 2014). The NDEP recognizes the importance of transitioning from pediatric to adulthood for teens entering their early adult years and emphasizes for healthcare providers to educate families more on this topic.

The following are recommendations promoted by the NDEP: encourage teens and young adults to assume more responsibility for diabetes self-management and make more independent judgments for their health care needs; help teens with diabetes make a smooth transition to adult care; and lastly, provide families and health care professionals with guidance in helping teens with diabetes transition to adult care (NDEP, 2015). The evidence suggested above illustrates the importance of implementing age-specific education to this particular group of patients to ensure better outcomes are attained and less disease complications arise.

According to the AACE, persons with diabetes should receive comprehensive DSME at the time of diagnosis and subsequently at all follow-up visits as appropriate (AACE, 2015). As evidence illustrates, DSME improves clinical outcomes and quality of life in individuals with diabetes by providing the knowledge and skills necessary for diabetes self-care (AACE, 2015). Other evidence based suggestions include therapeutic lifestyle management to be discussed with all patients with diabetes as part of their education.

Also, evidence shows in patients with diabetes, an A1C level >7% is associated with increased risk of micro- and macrovascular complications; therefore, it is recommended based on this evidence, to lower A1C levels by teaching more effective disease management strategies (AACE, 2015). Teaching interventions aimed at lowering glycemic levels (as evidenced by a lowered A1C) have decreased microvascular complications and, in some cases, macrovascular complications (AACE, 2015). In addition, according to the American Academy of Family Physicians (AAFP), clinicians should initiate a lifestyle modification program during patient education, including nutrition and physical activity modifications, as well as monitor HbA1c concentrations every 3 months and intensify treatment if treatment goals for HbA1c concentrations are not being met (AAFP, 2013). According to the same source, there is a need to ensure age appropriate, family-centered care, along with ongoing diabetes education to be most successful.

According to the Australian Diabetes Society's National Evidence-Based Clinical Care Guidelines for Type 1 Diabetes in Children, Adolescents and Adults, to minimize the impact of diabetes on cognitive function, every effort should be directed toward achieving glycemic targets (Australian National Health and Medical Research Council, 2011). With the revised diabetes education program at CHOC, this is one controllable intervention to help reach target A1C levels in the adolescent population.

Diabetes is a chronic disease that requires a person with diabetes to make a multitude of daily self-management decisions and to perform complex care activities. With the use of DSME, the adolescent is able to obtain the foundation to help navigate through these decisions, which according to much research, this can lead to improved health outcomes (Bardsley, et al, 2015). It is the position of the American Diabetes Association (ADA) that all individuals with diabetes

receive DSME at diagnosis, and as needed thereafter. In fact, this segment of education is so crucial that research shows DSME improves A1C levels by as much as 1% in people with type 2 diabetes and reduces the onset and/or advancement of diabetes complications (Bardsley, et al, 2015).

Literature Review

For this literature review, a PICO strategy was implemented to obtain the evidence above for this project. A search of the GoPubMed, HubMed, and MedLine Plus databases was conducted utilizing the PICO search strategy of *diabetes, education,* and *adolescent population.* The results yielded nine nursing articles with dates ranging from 2010 to 2015 which were incorporated into the final review.

The American Academy of Family Physicians (AAFP) (2013) released an article titled *Management of Newly Diagnosed Type 2 Diabetes Mellitus in Children and Adolescents* explaining the suggested management of newly diagnosed type 2 diabetes mellitus in children and the adolescent population. The article's purpose is to review data from a subcommittee team consisting of members from the American Diabetes Association, the Pediatric Endocrine Society, the American Academy of Family Physicians, and the Academy of Nutrition and Dietetics that met in 2013 to develop an evidence report that served as a major source of information for the current practice guideline recommendations in order to promote recent evidence based practices for the management of this illness. The guideline emphasizes the use of management modalities that have been shown to affect clinical outcomes in the adolescent population such as education on lifestyle modifications, as well as guidelines for frequency of monitoring A1C.

The American Association of Clinical Endocrinologist and American College of Endocrinology (AACE) (2015) published an article titled *Clinical Practical Guidelines for Developing a Diabetes Mellitus Comprehensive Care Plan* to explain most recent up-to-date guidelines developed to assist healthcare workers in the medical decision making process for the management of diabetes. The purpose of this guideline is to provide a practical guide for comprehensive care that incorporates an integrated consideration of complications of illness, as well as new and revised treatment goals that emphasize individualized targets for weight loss, A1C, and glucose levels in the diabetic population. The objectives of this article are to provide the following: an education resource for the development of a comprehensive care plan for clinical endocrinologists and other clinicians who care for patients with DM; an evidence-based resource addressing specific problems in DM care; and a document that can eventually be electronically implemented in clinical practices to assist with decision-making for patients with DM.

The American Diabetes Association (ADA) (2014) released an article titled *Statistics about Diabetes* that explains statistics from the National Diabetes Statistics Report from 2014, which is the most recent comprehensive assessment of the impact of diabetes in the United States. The purpose of this publication is to highlight the impact this disease has on the country in order to illustrate the severity of the illness and the effects is can have on the youth long term. Many highlights from the report are included such as the prevalence of diabetes, undiagnosed, new cases, deaths, as well as prediabetes; percentage of diabetes in the youth; diabetes by race/ethnicity; as well as the complications and co-morbities of this disease.

The Australian National Health and Medical Research Council (2011) released an article titled *National Evidence-Based Clinical Care Guidelines for Type 1 Diabetes for Children,*

Adolescents and Adults explaining details of the first Australian evidence-based guideline for type 1 diabetes that addresses clinical care across the lifespan. The purpose is to provide the reader with tools for proper diabetes education and management in order to illustrate the most up-to-date evidence based research guidelines for proper management of illness. Through the collaborative efforts of the Australasian Pediatric Endocrine Group and the Australian Diabetes Society, on behalf of the Australian Government Department of Health and Ageing, this guideline for health-care professionals and consumers addresses key aspects of clinical care for people with type 1 diabetes. These guidelines were approved by the Chief Executive Officer of the National Health and Medical Research Council (NHMRC) on 16 August 2011, under Section 14A of the National Health and Medical Research Council Act 1992; therefore, is current and applicable to this given project. Some significant and applicable suggestions in this article involve the following recommendations: the diabetes team should assess family functioning (including parental psychopathology) and diabetes-related functioning, including communication, parental involvement and support, and roles and responsibilities for self-care behaviors with the teen; clinician should educate on the importance of at home glucose monitoring to improve A1C levels; and lastly, educational and psychological interventions should be culturally, developmentally and age appropriate. The article also emphasizes that intensive glycemic control should be implemented to reduce the risk of onset or progression of microvascular and development of macrovascular diabetes complications, which aligns appropriately with this project's ultimate goal.

Bardsley, J., Cypres, M., Duker, P., Funnel, M., Hess, A., Maryniuk, M.,Powers, M., Siminerio, L., & Vivian, E. (2015) assert the importance of promoting one with diabetes the proper tools for diabetes self-management education (DSME) in order to prevent future co-

morbidities from developing or possible complications from occurring. This position statement provides the evidence and strategies for the provision of education and support services to all individuals living with diabetes, in particular the adolescent population. The article emphasizes the urgency for all the health care community whom are responsible for delivering quality care, to continue efforts to address the barriers and explore additional resources for DSME. The evidence in the article illustrates the significance in meeting the needs of those living with and managing diabetes through effective DSME in the outpatient setting, which relates to the objective of this project. The authors state that in order for people to learn the skills necessary to be effective self-managers, DSME is critical in laying the foundation along with ongoing support during teaching moments. In addition, DSME has been shown to be cost-effective by reducing hospital admissions and readmissions, as well as estimated lifetime health care costs related to a lower risk for complications, which is another objective with this project. Lastly, evidence shows, ongoing DSME can help the person to overcome barriers and to cope with the ongoing demands in order to facilitate changes during the course of treatment and life transitions, such as with the transition from teen to adulthood.

Borus, J. S., & Laffel, L. (2010) explain the barriers to adherence of diabetes management in the adolescence population. The purpose of this article is to review the recommended interventions that have shown promise in improving outcomes for this given population. According to the evidence, adolescents with type 1 diabetes demonstrate poorer adherence to treatment regimens, compared with other pediatric age groups. The article illustrates evidence based practices that have proven to be successful with the management of diabetes in the adolescent population. According to the research, successful interventions include expanding the number of teen support systems and ongoing psychoeducational tools to motivate

behavior changes in daily life that can help the adolescent to adhere to the suggested regimen, as well as reduce the daily burdens placed upon teens, which were incorporated into the project's diabetes handout upon revision. The article also reviews evidence that shows how technological innovations can seek to remind and inspire patients to follow through with their treatment regimens and help better manage the disease, which were included into the new diabetes educational handout as well.

Funnel, M. (2011) explains details of the National Standards for DSME which are designed to define quality diabetes self-management education and to assist diabetes educators in a variety of settings to provide evidence-based education to the public. The intent of this article is to illustrate evidence-based guidelines to support informed decision-making, self-care behaviors, problem-solving and active collaboration with the health care team as well as to improve health outcomes, clinical outcomes, and overall quality of life. Guiding principles incorporated into these national standards based on researched evidence include the following: diabetes education is effective for improving clinical outcomes and quality of life, at least in the short-term; importance of incorporating the Joint Commission International Standards for Disease or Condition-Specific Care, which outlines national standards and performance measurements for diabetes and addresses diabetes self-management education as one of seven critical elements; and lastly, clarifying the target population and determining its self-management educational needs serve to maximize health benefits.

Timeline

The project began in the beginning of September 2015 and is scheduled to conclude in January 2016 after final evaluation. Refer to Appendix C for timeline review.

Expected Results

Since the project essentially just began, it is too early to state whether it will be effective or not and if expected outcomes will be met. However, based on recent patient/family feedback and staff success stories, my expected results are an increase in staff awareness of effective diabetes education and issues teens are facing to interfere with adherence of diabetes management. Once more awareness was spread throughout the clinic on the problem of rising A1C levels in this particular age group, the team immediately took an active role in ensuring these changes are successful on the clinic floor. With the right tools in place for proper teen diabetes education and the implementation of recent evidence based recommendations, it is in my belief that this new found staff awareness will largely effect patient outcomes and aid in the management of diabetes in the future.

Nursing Relevance

Improving the process of diabetes education in the adolescent population has significant implications for the nursing profession. For the patients this study serves, it will allow the teen the ability to become a self-advocator, to self-manage the illness independently, have confidence in the overall management of disease, and understand key components of the disease and its treatment. This will allow nurses the opportunity to provide education to the public that is current, up to date, and based on evidence based practices proven to be effective in enhancing patient outcomes. It provides an opportunity to train nurses in the methodology of self-management and illustrates the importance of this intervention to ensure long term goals are met. Also, the diabetes team was able to use quality improvement methodology to develop and adapt this program to meet the needs of the population being served and in so doing, was able to create a flexible and highly effective intervention. By promoting patient accountability and disease management strategies, improvements will eventually be seen in health and will serve to reduce

the burden of morbidity and mortality, which ultimately will reduce health disparities in this vulnerable group of patients.

Conclusions

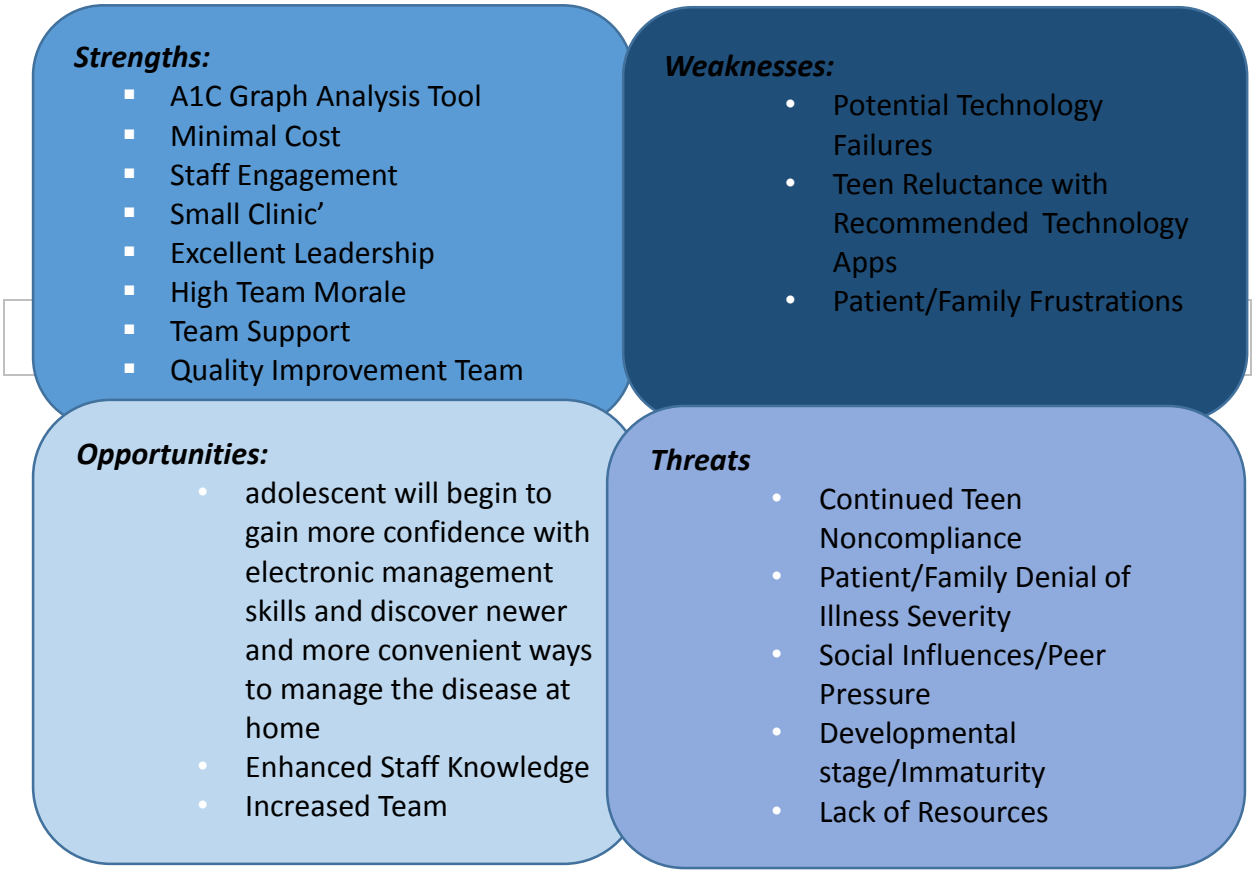
The theme for improvement this project focused on is effectiveness with knowledge management as the emphasis. We aimed to improve the adolescence diabetes education in the 15-18 years of age population within the endocrine specialty clinic at Children's Hospital Of County. In order to better integrate population health promotion and education at CHOC, we felt this project would help to enhance the development of age-specific health education in the outpatient setting. Based on a clinic audit, an average hA1C level of 8.1% was revealed. The goal was to decrease these levels from 8.1% to 7.9% within 90 days through the implementation of the revised diabetes brochure. Evidence suggests the following: DSME improves clinical outcomes and quality of life; an A1C level >7% is associated with increased risks of complications ; teaching aimed at lowering glycemic levels have decreased numerous complications; there is a need to ensure age appropriate, family-centered care, along with ongoing diabetes education to be most successful; and lastly, research shows DSME improves A1C levels by as much as 1% and reduces the onset and/or advancement of diabetes complications. Our objective was to create a revised diabetes handout to include the following topics: information for teen support groups; technology application resources to better track blood sugar levels, as well as nutritional intake; diet recommendations for teens with diabetes; ideas on food selection while eating out; tips for parents in preparing teen for independent living; the name of the certified diabetes educators at CHOC with their contact information; as well as tips for stress management for the adolescent population.

The implementation included a staff meeting to review goals/objectives, as well as a clinic in-service on teaching strategies/methods to ensure teen compliance is maintained. During the evaluation phase, data was analyzed by senior managers and the quality improvement team on November 16th 2015 to include: staff surveys, A1C levels from September to November, & patient/family survey and feedback questionnaires. The evaluation showed the following: increase in staff awareness of effective diabetes education, lowered A1C levels of 0.01%, and more teen compliance at home based on patient/family surveys. The evaluation was comparable to the team's predictions as the initial goal was based on realistic and timely outcomes. Due to sensitivity of information and protection of staff/patient privacy, the clinic at CHOC was unable to release copies of any data results or surveys collected during the implementation and evaluation phase.

It's recommended to continue to improve diabetes education to allow the teen the ability to become a self-advocator, to self-manage the illness independently, and to better understand key components of the disease and its treatment to reduce the burden of morbidity and mortality, which ultimately will reduce health disparities in this vulnerable group of patients. Many factors influence a given change's sustainability. The diabetes educational project created at CHOC encompasses many of the recommended components that can help to ensure a change is likely to remain such as having goals that fit with the organization's mission/procedures, support from organization's stakeholders, and perceived benefits of the staff. Empowerment of the local community is another factor that will most likely lead this change in the future. At CHOC, the local community's direct involvement in the establishment and management of clinic plays a major role in the funding of the clinic, as well as the support from federal grants and stakeholder's investments. Another factor effecting sustainability is the strong commitment by

the different groups and teams in the organization and the continued support from stakeholders involved at CHOC. As a microsystem that promotes prevention in the youth with a focus on controlling modifiable factors that lead to many chronic conditions through the support of its community, this change in particular, largely embodies the organization's overall mission and values. Through staff meetings conducted throughout this process, many team members expressed their support with this project and acknowledged the initial problem, as well as the need to address it. Therefore, focusing on team commitments and support with this project will be required for long term success. Also, showing stakeholders and upper management the changes that have already been seen in the clinic as a result of this project, will likely lead to future sustainability as well.

Appendix A


Strengths:
A1C Graph Analysis Tool
Minimal Cost
Staff Engagement
Small Clinic'
Excellent Leadership
High Team Morale
Team Support
Quality Improvement Team
Weaknesses:
Potential Technology Failures
Teen Reluctance with Recommended Technology Apps
Patient/Family Frustrations
Opportunities:
adolescent will begin to gain more confidence with electronic management skills and discover newer and more convenient ways to manage the disease at home
Enhanced Staff Knowledge
Increased Team
Threats
Continued Teen Noncompliance
Patient/Family Denial of Illness Severity
Social Influences/Peer Pressure
Developmental stage/Immaturity
Lack of Resources

Appendix B

	Annual Clinic Expenses (salaries)	**Annual Clinic supplies**	**Total Cost of Project**	**Annual Cost of Unmanaged Diabetes at CHOC**
	Annual salaries: 7 medical assistants ($154,000), 5 RNs ($285,000), clinic manager ($72,000), and 2 certified diabetes educators ($140,000) 48 hours of student preceptor - Free	$3,750 per month	Brochures (free); staff ($9,378)	The average cost of treating complications at CHOC related to unmanaged diabetes, is an estimated $10,746 per hospitalization. The total number of adolescent hospitalizations at CHOC related to complications from diabetes between July 1st 2015-September 1st 2015 was 92 patients, according to CHOC quality improvement analysis. This is a total cost of $988,632 in just a short 60 days, which would cost the organization $5,931,792.00 in expenses if improvements aren't made.
Total	**$651,000**	**$45,000**	**$9,378**	**$5,931,792.00**

Appendix C

Date To Be Completed	*Responsible Parties*	*Objectives*
Completed 09/07/15	Interdisciplinary team to include: clinic staff, myself, preceptor, other specialty clinic managers, certified diabetes educators, quality improvement team, etc.	Staff meeting to review problem identified in the unit, the anticipated change, and overall outcomes expected of the project.
Completed 09/15/15	Myself and preceptor	Compiled a temporary new diabetes educational brochure pending final review by management.
Completed 09/30/15	Myself, preceptor, charge nurse of endocrine clinic, endocrinologist, specialty department managers, and quality improvements team.	Reviewed and approved new diabetes educational brochure to be implemented in the endocrine clinic at CHOC on 10/09/15
Completed 10/05/15	Myself, preceptor and endocrine clinic team	Presented the new brochure to clinic staff with clear

		objectives and expected outcomes. Also had presentation by certified diabetes educators on effective diabetes education for this vulnerable population of patients.
Completed 10/09/15	Endocrine clinic team and scheduled patients	Official implementation of new project
11/30/2015	Interdisciplinary team to include: clinic staff, myself, preceptor, other specialty clinic managers, certified diabetes educators, quality improvement team, etc.	Quarterly review to evaluate the following data: A1C levels for the adolescent population from September to December; patient/family survey and feedback questionnaires; and assessment findings gathered at next patient follow up appointments, such as results of blood work and of blood sugars from home that were submitted to electronic data base.

References

American Academy of Family Physicians (AAFP). (2013). Management of Newly Diagnosed Type 2 Diabetes Mellitus in Children and Adolescents. Retrieved from: http://pediatrics.aappublications.org/content/131/2/364.full?sid=d1840c80-287b-43ca-ac9c-68b0b1d5dfa8

American Association of Clinical Endocrinologist and American College of Endocrinology (AACE). (2015). Clinical Practical Guidelines for Developing a Diabetes Mellitus Comprehensive Care Plan. Retrieved from: https://www.aace.com/files/dm-guidelines-ccp.pdf

American Association of Colleges of Nursing (AACN). (2013). Competencies and curricular expectations for clinical nurse leader education and practice. Retrieved from: http://www.aacn.nche.edu/cnl/CNL-Competencies-October-2013.pdf

American Diabetes Association (ADA). (2014). Statistics about Diabetes. Retrieved from: http://www.diabetes.org/diabetes-basics/statistics/?referrer=https://www.google.com/

Australian National Health and Medical Research Council. (2011). National Evidence-Based Clinical Care Guidelines for Type 1 Diabetes for Children, Adolescents and Adults. Retrieved from: https://www.nhmrc.gov.au/guidelines-publications/ext4

Bardsley, J., Cypres, M., Duker, P., Funnel, M., Hess, A., Maryniuk, M.,Powers, M., Siminerio, L., & Vivian, E. (2015). 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. *Journal of the Academy of Nutrition and Dietetics*, 115:(8), 1323 – 1334. Retrieved from: http://www.andjrnl.org/article/S2212-2672(15)00549-3/pdf

Borus, J. S., & Laffel, L. (2010). Adherence challenges in the management of type 1 diabetes in adolescents: prevention and intervention. *Current Opinion in Pediatrics*, 22(4), 405–411. http://doi.org/10.1097/MOP.0b013e32833a46a7. Retrieved from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3159529/

Funnel, M. (2011). National Standards for Diabetes Self-Management Education. *Diabetes Care*, 34:1 doi: 10.2337/dc11-S089. Retrieved from: http://care.diabetesjournals.org/content/34/Supplement_1/S89.full

National Diabetes Educational Program (NDEP). (2014). Overview of Diabetes in Children and Adolescents. Retrieved From: http://ndep.nih.gov/media/Overview-of-Diabetes-Children-508_2014.pdf

National Diabetes Educational Program (NDEP). (2015). Transitioning from Pediatric to Adult Health Care Online Tool Presentation. Retrieved from: http://ndep.nih.gov/resources/ResourceDetail.aspx?ResId=273