Enhancing Diabetic Patient Continuous Glucose Monitoring Access

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N670 Evidence Based Improvement Project

Adapted from Squire 2.0 Guidelines

Enhancing Diabetic Patient Continuous Glucose Monitoring Access

Colleen Ildefonso

University of San Francisco

Instructor: Dr. Elena Capella
Section I. Abstract

Problem: Diabetic patients utilize treatments that require frequent monitoring and medication changes based on their blood sugar results. Continuous Glucose Monitoring (CGM) is more commonly used for diabetes management as time in range is becoming more prevalent to measure diabetes outcomes. Many diabetic patients find CGM use more accessible than finger sticks and glucometers. In contrast, others utilize the technology to closely monitor their blood sugars for interventions throughout the day. However, older adults have difficulty facilitating new CGM technology and may require further reinforcement using additional education methods such as teach-back.

Context: The endocrinology clinic serves a patient population, primarily diabetic patients who utilize treatments that require frequent monitoring and medication changes based on their blood sugar results. This clinic has deficits in patient care related to the initiation of patient continuous glucose monitoring devices (CGM). The current process delays patient care and impedes healthcare providers' work processes within the endocrinology and diabetes education clinics by limiting time dedicated to patient care.

Interventions: This problem was mitigated by creating a foundational baseline for the CGM process from the point of prescription to the point of use or evaluation, reviewing the standardized CGM process using the teach-back method with patients, and educating the clinic staff on the standardized process.

Measures: The measures utilized to monitor the study are the percentage of reduced clinic visit time dedicated to CGM set-up with providers and Diabetes Education Clinic, the reduction in time dedicated per provider per patient for CGM set-up in Endocrinology and Diabetes Education Clinic, and the clinic staff feedback with a detailed log of time dedicated for CGM
device download and set-up time during clinic visits. An additional measure used is the evaluation of provider knowledge about the process, all through surveys throughout the quality improvement process.

**Results:** At the conclusion of the project, time dedicated to education during visits was reduced from 1.4 minutes to 1 minute on average, the percentage of office visit time lost was reduced from 6.5% to 1%, and the average number of correct answers for CGM access knowledge test increased from 2.9 to 3.8 out of 5, and overall percentage correct on the knowledge tests increased from 57% to 76%.

**Conclusions:** This intervention successfully met the expected goals by decreasing the percentage of office visit time dedicated to CGM education and increasing the overall staff knowledge of the CGM process. After the conclusion of this project, it is expected to continue in the clinic for use by healthcare providers and potentially expand to other primary care and hospital-based clinics.

**Keywords:** patient, education, continuous glucose monitoring (CGM), clinic, Diabetes
Section II. Personal Leadership Statement

My name is Colleen Ildefonso. I am a nurse with over seven years of experience in inpatient Medical Surgical and Critical Care Units and an outpatient Endocrinology Clinic. The initial year of my inpatient experiences was detailed by harrowing experiences resulting in much strife. After completing my Baccalaureate program, I aimed to improve the care environment around new nurses being introduced into the acute care setting. This was later expanded upon as I was introduced into the Overlake Endocrinology clinic setting and found that it is essential to both strengthen and develop the nursing role regardless of the environment. The University of San Francisco's MSN-CNL Program has reinforced this vision by providing resources and tools to project the program concepts into our work environments to improve patient care.

My values align the most with the principle of integrity on the part of reinforcing my team members so that they may continue to provide care with compassion, agility, respect, and engagement. By reinforcing the team members' knowledge and establishing a foundation for care within the clinic, our clinic team can better serve patients through my empowerment of their roles and capabilities. My quality improvement topic was based on the need for foundational knowledge within my endocrinology clinic's microsystem. The attempt to standardize the diabetic patient CGM preparation for use or education within the clinic comes from the need to eliminate waste in the form of inefficient clinic visits and, more specifically, the time used for continuous glucose monitoring (CGM) set-up rather than patient assessment and teaching diabetes-related education. The expected result of this project is to increase efficiency in patient care for the care team, allowing the team to dedicate more time to other clinic needs. Patient care will also improve as standards become well-defined and patient expectations are met reasonably, all while eliminating lapses in education.
Section III. Problem Description

The endocrinology clinic serves a patient population that is primarily diabetic patients. Many of these patients utilize treatments that require frequent monitoring and medication changes based on their blood sugar results. This clinic has deficits in patient care related to the initiation of patient continuous glucose monitoring devices (CGM). The current process delays patient care and impedes healthcare providers' work processes within the endocrinology and diabetes education clinics by limiting time dedicated to patient care.

The current process can be improved by integrating nursing education during patient visits and initiating a CGM with patient teach-back. The studies by Martens et al. (2019) and Dinh et al. (2016) present evidence that the teach-back method in CGM can effectively lower Hemoglobin A1c to increase patient outcomes in various healthcare outcomes. According to Hong et al. (2020), patients also showed decreased likelihood of developing diabetic complications and hospitalization related to diabetic complications and had a significantly smaller expenditure. Without intervention, there will be continued time dedicated to CGM education rather than provider interventions, reducing the potential for improved clinical outcomes for the diabetic patient population.

Specific Project Aim

To decrease the amount of provider and diabetes educator time spent educating diabetic patients in the endocrinology clinic by 50% after implementing a standardized CGM device protocol within six months (08/01/2023).

Available Knowledge

PICOT Question
In older adults with diabetes needing Continuous Glucose Monitoring, how does CGM teach-back, compared to usual patient education, affect patient preparedness over two months?

**Search Strategy**

The use of the teach-back method about patient preparedness for CGM teaching was investigated through a comprehensive electronic search in February 2022. The databases utilized for this search were: the Cochrane Database of Systematic Reviews, Joanna Briggs Institute EBP Database, CINAHL Complete, PubMed, and Academic Search Complete. The terms: *technology, education, continuous glucose monitoring, Type 2 Diabetes, older populations, teach back, health literacy,* and *questionnaire* were utilized to conduct searches within these databases. Limitations of the literature search included articles from 2013 to the present, written in English and focusing on the older adult populations in the United States. The Johns Hopkin Nursing Evidence-Based Practice [JHNEBP] Level and Quality rating form was utilized to select the articles for this review.

**Critique of Evidence**

CGM technology is relatively new and may require enhanced teaching strategies, such as the teach-back technique, to reinforce patient understanding and compliance with a diabetes regimen. An investigation to answer this PICOT question included a critical appraisal of three articles that explored the impact of CGM use on diabetes management and two articles related to the use of the teach-back method to improve patient outcomes of diabetes and chronic conditions.

Azhar et al. (2020) presented a study to evaluate CGM’s clinical implications among patients with diabetes. They concluded three significant findings: HbA1c is becoming less popular as a measure of glycemic control, CGMs have a substantial role in diabetes management
with poor glucose tolerance, and the interpretation of the CGM still has room for improvement (Azhar et al., 2020). The resulting themes from Langendam et al. (2013)’s systematic review and meta-analysis were more significant declines in Hemoglobin A1c for real-time CGM users starting insulin-pump therapy and a statistically more considerable average decline in Hemoglobin A1c for CGM users compared to standard monitoring blood glucose users. Martens et al. (2019) quality improvement project evaluated the impact of CGM on Primary Care management of Type 2 Diabetes. The study results showed an increased time in the goal range, fewer hyperglycemic events, and overall glycemic control improvement (Martens et al., 2019).

Dinh et al. (2016) published an article investigating how well the teach-back method improved adherence to healthcare treatment regimens. It showed that the teach-back method elicited positive effects in a wide range of healthcare outcomes though not always statistically significant. It improved disease-specific adherence and self-efficacy outcomes and positive but inconsistent trends in improved self-care and reduced hospital readmission rates.

According to the JHNEBP Quality and Rating Form, these articles range from Level I to V related to using a meta-analysis for quality improvement projects. Though smaller sample sizes and quality-based investigations were done, the comprehensive systematic review was able to also support the use of CGM for diabetic patient control in a quantitative form. Overall, the implications of each of these studies show that: the use of CGM technology in for treatment of diabetes leads to fewer incidences of hyperglycemic excursions and the use of the teach-back method in the setting of diabetes while the use of the teach-back method in chronic conditions and more specifically diabetes has been shown to improve patient outcomes and independent management of their condition. The effectiveness of teach-back education and CGM use for
diabetes management is guiding themes to enhance patient care and will influence the
development of this project (See Appendix A: Evaluation Table).

**Rationale**

**Watson’s Caring Theory and Lewin’s Theory of Change**

Watson’s Caring Theory and Lewin’s Theory of change were used to design this project. Watson’s theory focuses on the patient experience in the form of the PICOT question. Lewin’s Theory of Change creates a framework for understanding the phases of the process, particularly the moving or transitioning phases. The refreezing stage occurs once the process is beneficial to the patient population.

Jean Watson developed the Theory of Human Caring from 1975-1979 (Watson, 2021). It attempted to “bring meaning and focus to nursing as an emerging discipline and distinct health profession with its unique values, knowledge, and practices, with its ethic and mission to society” (2021, The Theory of Human Caring: History and Evolution Section). From this theory, a framework called “carative factors” also emerged, meant to complement conventional medicine while confronting the cure orientation of medicine by integrating the theory of human caring (Watson, 2021, The Theory of Human Caring: History and Evolution Section). Caring Science is described as discovering and honoring all aspects of humanity, defining care as a driving factor of nursing, and drawing knowledge from related fields. Watson’s theory of facilitating the patient’s needs through nursing values exemplifies the need for improving the patient experience related to diabetes-based technology. It guides the project by considering the patient experience in the project design.
Kurt Lewin was a social psychologist who created the Theory of Planned Change, including the concepts: unfreezing, moving, and refreezing in the 1940s (Shirley, 2013). His exploration of FFA eventually led to his exploration of the Theory of Planned Change, including the concepts: unfreezing, moving, and refreezing in the 1940s (Shirley, 2013). Unfreezing is the process in which you prepare for the change, which often includes an analysis of the situation and creating a sense of urgency or need for a change. Moving or transitioning entails envisioning the change as a continuous process rather than a singular event. Refreezing is the final step of the theory that demands stabilizing new processes in the existing systems.

These two theories together identify variables related to patient experience, which are exhibited as patient care deficits and improved patient experiences. Watson’s and Lewin’s Theories also create a means for exploring the patient experience. The result is a cyclic nature of Watson’s Caring theory providing variables complimenting Lewin’s Theory of Change.

**Implications for Nursing Practice**

Regarding diabetes management and nursing interventions, having all the information possible to make informed decisions about patient population care is ideal. The use of teach-back interventions within the older adult population has positively improved patient engagement. Using a CGM in older adults with the teach-back method suggests improvements in Diabetes management and explores other barriers present in this population. Time in the optimal range is a more reliable method of glucose control than HbgA1c. The CGM allows healthcare professionals to treat the patient population by assessing the time in range as an alternative to HbgA1c. The
use of a CGM cultivates understanding and serves as motivation for patients while managing Diabetes.

**Context**

**Purpose**

The existence of my clinic is to treat patients who have Endocrinology needs. The providers and ancillary staff provide services that treat complex Endocrine disorders beyond the capabilities of Primary Care Services. This clinic cares for complex endocrinology patients but does not provide surgical or radiation treatments.

**Patients**

Within the Endocrinology population, primary diagnoses that are treated include Diabetes (Type 1 & 2), Hyperthyroidism, Hypothyroidism, Transgender patients, and those with rare Endocrinology conditions with adults mainly over 40. They can utilize the clinic itself for specialized Endocrinology plans of care and treatments, diabetes education and counsel on diabetes management, and communication with the medical assistants and registered nurse as needed for immediate symptom concerns or urgent needs. Many patients are very welcome to the care they receive, and others are disappointed in how they are provided with care.

**Professionals**

In this clinic, there are Providers (Medical Doctors and a Nurse Practitioner), Medical Director, Clinic Manager, Clinic Supervisor, Patient Service Representative (PSR), Registered Nurse (RN), Medical Assistants (MA), diabetes educators, and representatives for pharmaceutical and device companies.

During clinic visits, the PSR, MA, and providers primarily interact with the patient with alternate staff like the RN is utilized to fill the roles of other team members within their scope of practice. Outside of clinic visits, the RN handles communications and concerns for the triage of
symptoms and patient education, for which MAs are responsible for administrative work. The roles should be practiced to the highest of their credentials, though this is not always practiced as the MA, RN, and sometimes the providers are often unable to delegate duties to other roles in other clinics.

**Processes**

My workplace primarily does not follow a specific process for change in the microsystem and often follows Lewin’s Theory of Change which only approaches changes if there is a significant need for change or a deficit in patient care rather than being potential prophylactic obstacles. The processes in the clinic are often delayed as provider visits run 20 to 30 minutes behind, and patient calls and received messages take more than two days to be responded to. These delays are often attributed to the absence of consistent processes throughout the clinic and the need for team members to serve multiple roles, ultimately causing a waste of resources and time. This is generally not a cause for concern, but when roles are not clearly defined, or there is excess communication, patient needs are often left underserved.

**Patterns**

This microsystem consistently exemplifies the deficits that come from a non-established base of operation. The process passed along by word-of-mouth show deficits in patient care as team members cannot communicate effectively and document their effort clearly and concisely for each team member to help with any patient concern or situation. The Endocrinology Clinic identifies the most with transformational leadership as there is a need to establish a foundation recognized by the leadership and, eventually, the clinic staff. This microsystem meets monthly to evaluate their methods of patient care and how successes are measured in the organization. Patients and families are not involved in how processes are changed or completed but are a
significant driving factor in initiating change when a deficit in patient care is recognized. The desired results and outcomes are first to establish consistent processes within the clinic to eliminate waste. At the same time, new members are being integrated and eventually growing the clinic as the patient population has only increased in the last few years.

**Gap Analysis**

The current state is defined by the excessive time it takes patients to access CGM, which takes from two weeks to more than one month when a patient receives a prescription for the device to actual utilization to enhance patient care. The future state could consist of taking the current process and streamlining it among all healthcare providers involved to decrease the time to less than one month from prescription to patient use and integration into patient care.

The action steps needed to achieve this outcome include a thorough analysis of the current process and establishing quantitative factors to be measured for comparable outcomes to the intervention. This data gathering will include information from all sources of patient care and determining which providers are directly involved with this care. There will also be an investigation into the clinic and patient-controlled factors that may affect the outcomes of the new interventions throughout the process. There will also be an educational process among the stakeholders and healthcare providers directly involved in patient care and continuing education to maintain the newly established processes. Please refer to Appendix A for the chart on Gap Analysis (See Appendix B: Gap Analysis).

**SWOT/C Analysis**
The major strengths of this clinic include an eager management team, highly involved in improvements throughout the clinic, the ability of new staff to adapt to new processes, optimistic staff who are open to new practices, staff’s understanding of the essential need for CGM, and the clinic’s access to manufacturing companies and representative resources. Weaknesses in this clinic include a newly established clinic system with a proper foundation for policy, higher healthcare provider turnover rates, new staff to endocrinology needing specialty-specific education, an internal diabetes management system, and the inability for providers to see patients promptly. This clinic’s growth opportunities include an increasing diabetic population, the growing use of diabetic devices in care, many representatives contacting them to provide resources, and device manufacturing companies constantly reaching out to provide updates and tips for device reception and utilization. Threats for this clinic include the inability of an older population to utilize new technology, accessibility to patient education, other endocrinology practices having shorter wait times for care, and patients' preconceived ideas of the organization’s processes from other organizations (See Appendix C: SWOT Analysis).

**Power Interest Grid and Stakeholders**

The project was designed to satisfy the sponsor stakeholders, particularly the clinic manager and supervisor. The stakeholders managed closely were the endocrinology providers, diabetes educator supervisors, and patients. Those who were kept informed were patient families and diabetes educators, while those needing monitoring included medical assistants and patient service representatives (See Appendix D: Power Interest Grid).
Initial implementation and continued education to the entire team for four hours each year were dedicated to the importance and use of the CGM education process. Monthly updates in clinical team meetings were done to evaluate its progress and improvement of patient care over time. Details of the improvement process were shared by reporting the progress in percentages. Continuous communication with the current team members and integration of new team members into the process was accomplished. Clearly defined documentation of the process and how to implement this solution was performed so the various parties understood the process.

**Intervention**

The project manager implemented nurse education while working with and teaching the remainder of the healthcare provider team through a series of education to ensure standardization. The actual implementation of the plan was adopted and monitored by both the project manager and nurse, who performed the educator role to ensure that patients' progress throughout the program continued seamlessly (See Appendix E: Project Charter). A Standardized checklist and timeline were used to clarify the expected process for CGM use and distribution. The timeline was followed, which included gathering information for three months, implementing the new intervention for one month, and finally reevaluating and changing the intervention as necessary for the final month of the project (See Appendix F: Project Timeline and Appendix G: Gantt Chart).

The education plan for both providers and patients included sources for CGM supply, contact information for each source, expected timelines for gathering supplies, the need for a smartphone or receiver to utilize the CGM and applications associated with it, the next follow-up visit, and the contact information for diabetes education or endocrinology clinic office. The providers or supervisors of those involved in patient care were given this information to
distribute. The endocrinology team received four hours of education throughout the process to evaluate the outcomes of this intervention and state modes of improvement throughout the process (See Appendix H: CGM Access Plan Education).

**Budget**

The implementation of the program cost an estimated $19,793, including the time for four hours of direct staff education directed at the Endocrinology Clinic’s four Medical Assistants, Registered Nurse, Nurse Practitioner, three Endocrinology providers, and 400 hours of dedicated time from a project manager. This estimate was based on the median wage without benefits of the above healthcare providers from the U.S. Bureau of Labor Statistics (2021). In contrast, the Cost Avoidance is about $128,875.20 per year. This amount included an estimated one hour taken away each business day from the Endocrinology Nurse, three Endocrinologists, Nurse Practitioners, and three diabetic educators in the form of clinic visit time.

**Financial Analysis**

According to a cost-benefit analysis, implementing a nurse education with teach-back to CGM device training benefited the organization financially. The net benefit was about $109,082.08 in one year and $218,164.16 the next year if the same interventions were implemented for two years. This means that a benefit-cost ratio of $1 spent for the implantation of the program saves about $6.50 in hospital costs and patient care (See Appendix I: Budget and Cost Avoidance).

**Study of the Intervention**

**Measures**
The goal of the study was to standardize the implementation of a CGM in diabetic patient care at the endocrinology clinic, a multifaceted team approach for the endocrinology and diabetes educator clinic. Data was collected from a retrospective randomized sample of 9 patient records to establish a baseline. After the baseline data was established, ten patient records were reviewed weekly for the project measures during three months in 2023. The data plan will be reevaluated every month based on the results. The measures included to monitor the process of the study are the percentage of clinic visit time dedicated to CGM set-up with providers and Diabetes Education Clinic is reduced, the amount of time dedicated per provider per patient for CGM set-up in Endocrinology and Diabetes Education Clinic is reduced, and the clinic staff feedback with a detailed log of time dedicated for CGM device download and set-up time during clinic visits reduced (See Appendix J: Patient CGM Access Survey). A final measure of the study will be the evaluation of provider knowledge about the process, and nursing intervention will also be evaluated by a pre and post-education survey before the intervention is implemented and after the intervention has been implemented for one month (See Appendix K: Staff Education Survey).

The PDSA cycle will assist our team in assessing a new improvement by confronting individual obstacles that may occur through the current processes rather than revising concepts that are generalized to all patients (King et al., 2019). The plan, do, study, then act cycle will directly confront individual obstacles that may inadvertently affect the effectiveness of nursing education on diabetic patients’ quality of care. It can systematically improve the research study through its prophylactic capabilities.

**Ethical Considerations**
According to the Jesuit values of the University of San Francisco (2023), this project aligns most with the concept of *cura personalis*, or care for the entire person. The project takes into consideration the populations of diabetic patients who are unable to adapt to new CGM technology as well as catering independently and effectively to all the team members involved in their care by facilitating their mind, body, and spirit to facilitate patient care. The American Nurses Association Code of Ethics refers to nurses who serve all individuals with compassion, respect, dignity, worth and unique characteristics (2015). In addition to the Jesuit values, the respect and care for a patient are also exemplified by the first provision in that the unique characteristics of diabetic individuals who require more help facilitate their use of new technology and further treat each individual with the proper compassion towards their obstacles in order for them to continue treatment with respect and dignity.

This project has been approved as a quality improvement project by the University of San Francisco faculty using Quality Improvement review guidelines. The project was determined to be a quality improvement project, not a research design, not using untested methods or standards, and not receiving funding from federal agencies or research-based organizations to be conducted. Therefore, this quality improvement project does not require IRB approval, as evidenced by meeting the criteria in the Non-Research Determination Form (see Appendix L: Statement of Non-Research Determination Form).

**Outcome Measure Results**

**Patient Education**

Before implementing the teach-back method for patients to understand their CGM better before their healthcare provider visit, an average of 1.4 minutes was lost to education, 6.5% of visit times were lost to education needs during the visit, and providers provided a quality rating
of 4.9. This quality rating was affected by the potential of access to supply issues, patients not having access to the appropriate accounts, and the inability to access resources for help. Due to being unable to implement the intervention over three months, qualified patients who had a new CGM start or were entirely new to CGM use were selected proactively over two weeks and contacted by the Endocrinology nurse to implement teach-back.

The teach-back included reviewing where each selected patient’s supplies were coming from, providing resource numbers, and checking all CGM supplies. After the intervention, it was noted that the average time lost per visit was 10.2 minutes, 32% of visit time was lost to education, and a quality rating of 4.4 was noted. However, after eliminating one outlying point of data from an external clinic, the data shows: that one minute per visit was lost on average, 1% of the visit time was lost to education, and a quality rating of 5 was noted. When assessing the outlying data, it was noted that the healthcare provider completing the survey may have misunderstood the education provided by the nursing intervention.

**Staff Education**

A secondary intervention implemented concurrently with the patient intervention was patient-facing staff education for those who communicate information to the patients. Before the intervention, no protocol or process was widely known among all staff making direct-patient contact, and multiple agencies participated in the diabetes patients whom the Endocrinology Clinic saw. Three major staffing sources were evaluated for their knowledge of patient CGM use: the Endocrinology Clinic, Patient Service Representatives for both Endocrinology and Primary Care, and Diabetes Education Clinic. These staffing sources were chosen due to their high contact with diabetic patients seeking information about their CGM. A baseline was evaluated with four multiple-choice questions on CGM supply sources, supply wait times,
systems commonly used, and contact information for each healthcare provider clinic. The results showed that the average number of correct questions was 2.9, and the percentage correct was 57%.

During the patient implementation of the intervention, staff was educated on the CGM process in the time between the Endocrinologist's prescription to the next follow-up appointment with a health care provider. Staff members were given a presentation (See Appendix M: Staff Education Presentation) and summary (See Appendix: Staff Education Summary) of the information meant to be retained. After this, they were re-evaluated using the same survey again, resulting in an average of 3.8 right questions and 76% correct answers. Some important limitations to the data included cancellations of patients, inability to contact patients, patients opting out of CGM treatment and prescriptions, patient responsiveness to staff intervention, and staffing availability. The improvement in staff education and patient response to the intervention was expected as there were no previous interventions to improve both staff and patient knowledge outcomes. The greater consistency of information for both staff and patients resulted in a more predictable and efficient relay of knowledge among staff members, creating a more consistent environment of care. Also, the access to the same resources provided by the Endocrinology Clinic’s nurse made a single point of contact for multiple clinics to contact when resources are needed.

**Summary**

Significant findings in this quality improvement project included using teach-back for patients and providers, improved the efficacy of patient care, and overall knowledge of CGM device accessibility. The intervention of a nurse to prepare a patient for their upcoming visit does show a decrease of 5% of the overall visit time dedication to CGM education and an increase of
quality from 4.9 to 5 during follow-up visits as provider times are less interrupted. In addition, the staff education resulted in a 19% increase in staff knowledge of CGM devices after the nurse provided presentations and staff resources (See Appendix O: Resulting Data). One extensive lesson learned in this quality improvement project was the ability to coordinate teaching to staff through contacting multiple clinics and presenting information to a large group of people. The most significant intake of information and input from the staff was taken from staff meeting surveys, and the absence of a staff meeting during the implementation phase meant there was less opportunity to present information to the group. Another positive lesson was the creation of resources available to all staff members so that information can create a foundation for knowledge going forward; with the provision of staff education through a PowerPoint and summary page, the staff was able to better answer the knowledge quiz with ease and resulted in better quiz scores.

Conclusions

After the presentation, staff readily accepted the intended interventions. When presented to the Endocrinology Clinic, the providers asked if the project could be expanded to all locations of the Clinic. However, it could only be conducted at one of the three locations. Additionally, the Diabetes Education clinic was interested in expanding this intervention to Primary Care and hospital-based follow-ups for their patient care to prepare patients for their visits better. Implementing an intervention from the same knowledge base can create more efficient and consistent patient care among these healthcare settings, improving the quality of care and overall population health. This intervention could not be implemented to its full potential as the implementation timeline was four weeks, and the traditional timeline with a follow-up visit was three months. However, better results are expected with time and a collective knowledge base
from all healthcare providers. For those who experience any issues with implementation, this quality improvement project was supported by mentors who can provide a different perspective and their experience on change within the microsystem. Mentors helped increase the adaptability of the intervention and promoted interdisciplinary communication.
References


https://www.nursingworld.org/coe-view-only


https://doi.org/10.4103/jpbs.JPBS_7_20


# Appendix A: Evaluation Table

PICOT Question: In older adults with diabetes in need of Continuous Glucose Monitoring, how does CGM teach-back compared to usual patient education affect patient preparedness over a two-month period?

<table>
<thead>
<tr>
<th>Study Design</th>
<th>Sample</th>
<th>Outcome/Feasibility</th>
<th>Evidence Rating</th>
</tr>
</thead>
</table>
- CGM has a substantial role in DM management with poor glucose tolerance.  
- The calibration and interpretation of the device still need improvement.  
- Its convenience makes it more user-friendly. | JHNEBP Level II B |

**Systematic Review**

**Sample:** N= 21

- The teach-back method showed positive effects in a wide range of healthcare outcomes though not always statistically significant
- Improved outcomes in disease-specific knowledge, adherence, self-efficacy, and inhaler technique
- Positive, inconsistent trends in improved self-care and reduction of hospital readmission rates
- Limited evidence regarding QOL or disease-related knowledge retention

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**Systematic Review, meta-analysis**

**Sample:** 1366 references

- After six months, there was a significantly larger decline in hemoglobin A1C for real-time CGM users starting insulin-pump therapy
- For patients starting on CGM only, the average decline in hemoglobin A1C was also statistically larger for CGM users compared to standard monitoring blood glucose users

**JHNEBP**

**Level I B**
<table>
<thead>
<tr>
<th>Authors</th>
<th>Title</th>
<th>Sample</th>
<th>Findings</th>
<th>Evidence Level</th>
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</thead>
<tbody>
<tr>
<td>Martens, T. W., Bergenstal, R. M., Johnson, M. L., Davidson, J. L., &amp; Simonson, G. (2019).</td>
<td>1280-P: Effect of Professional CGM (pCGM) on Glucose Management in Type 2 Diabetes Patients in Primary Care. Diabetes, 68 (Supplement 1). <a href="https://doi.org/10.2337/db19-1280-P">https://doi.org/10.2337/db19-1280-P</a></td>
<td>Sample: N = 68 Type 2 diabetes for less than one year A1C greater than or equal to 7.0% to 11.0</td>
<td>Using pCGM in a primary care setting is effective at lowering A1C, increasing TIR, and reducing time in hyperglycemia</td>
<td>JHNEBP Level V C</td>
</tr>
<tr>
<td>Hong, Y., Huo, J., Jo, A., Cardel, M., Mainou, A. (2020).</td>
<td>Association of patient-provider teach-back communication with diabetic outcomes: A cohort study.</td>
<td>Sample: 2901 adults 18 years or older with diabetes diagnosis</td>
<td>Patients with teach-back experience were less likely to develop diabetes complications and be admitted to the hospital related to diabetic complications at a 1 year follow-up. Patients with teach-back experience has significantly smaller increase in total expenditures.</td>
<td>JHNEBP Level III B</td>
</tr>
</tbody>
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Appendix B: Gap Analysis

## Gap Analysis

**Area under consideration:** Non-standardized process for CGM device protocol create time wasted during provider and diabetes educator visits that could be utilized for assessment and other patient plan of care interventions.

**AIM statement format:** To decrease the amount of provider and diabetes educator time spent educating diabetic patients in the endocrinology clinic by 50% after implementing a standardized CGM device protocol within six months (08/01/2023).

<table>
<thead>
<tr>
<th>Desired State</th>
<th>Current State</th>
<th>Action Steps</th>
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<tbody>
<tr>
<td>CGM education takes less than 25% of a provider and diabetes educator visit.</td>
<td>CGM education uses over 25% of provider and diabetes educator visits, taking away time for nutrition advice and</td>
<td>• Determine of the current process from prescription to access for the patient</td>
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<td></td>
<td></td>
<td>• Determine of clinic-controlled factors</td>
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<td></td>
<td>• Determine what additional resources are available to the clinic.</td>
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<td></td>
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<td>• Determine the 3 most significant obstacles causing delays in patient care</td>
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<td>• Determine which staff are impacted by the new intervention</td>
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<td></td>
<td>• Gather baseline data for provider dedicated clinic time to CGM preparation</td>
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<td>• Create and documenting a proposed standardized process for CGM preparation in clinic</td>
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<td></td>
<td>• Implement of the nurse based CGM education</td>
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<td>• Surveys to the staff for data evaluation of nursing intervention</td>
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<td></td>
<td></td>
<td>• Reevaluate for unexpected needs for the interventions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Revision of process to accommodate clinic-based needs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Evaluation of results from baseline to post-intervention</td>
</tr>
</tbody>
</table>
# Appendix C: SWOT Analysis

## Enhancing Diabetic Patient CGM Access

<table>
<thead>
<tr>
<th>Internal (attributes of the organization)</th>
<th>Favorable/Helpful</th>
<th>Unfavorable/Harmful</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengths</strong></td>
<td>• Eager management team, who is actively involved in the clinic's improvement</td>
<td>• The newly established clinic system is less than ten years old; other competitors have more well-established policies and guidelines.</td>
</tr>
<tr>
<td></td>
<td>• little endocrinology practices on the &quot;east side&quot; of king county</td>
<td>• Change in providers within the next year will impact productivity.</td>
</tr>
<tr>
<td></td>
<td>• The new staff allows room for adaptability within new processes</td>
<td>• New staff to endocrinology may pose more educational needs.</td>
</tr>
<tr>
<td></td>
<td>• Optimistic staff who invite the use of diabetes devices in the setting and reinforce patient treatment</td>
<td>• The poor foundation of existing policies in the outpatient setting</td>
</tr>
<tr>
<td></td>
<td>• Staff awareness of the necessity of CGM devices.</td>
<td>• Patient's perception of diabetes education within the organization</td>
</tr>
<tr>
<td></td>
<td>• Access to manufacturing companies from representatives</td>
<td>• Lack of staff</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Fully internal diabetes management system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The inability of providers to see patients promptly.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>External (attributes of the organization)</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Diabetes population with increased awareness of their condition</td>
<td>• The older population may have accessibility issues with technology</td>
</tr>
<tr>
<td></td>
<td>• The growing use of technology for diabetes care</td>
<td>• Accessibility issues to resources for patient education</td>
</tr>
<tr>
<td></td>
<td>• Various representatives are attempting to contact this organization as fewer endocrinology practices exist in the area.</td>
<td>• Other established endocrinology practices may have decreased wait times for care.</td>
</tr>
<tr>
<td></td>
<td>• Surrounding technology-based companies lead to well-informed patients before starting devices.</td>
<td>• Patient's awareness of internal changes</td>
</tr>
<tr>
<td></td>
<td>• Endocrinology device representatives regularly contacting the clinic to provide resources and updated information on each device</td>
<td>• Patient's awareness of preconceived ideas based on other organizations’ process</td>
</tr>
</tbody>
</table>

Adopted from: SWOT en.svg. (2020, November 5). Wikimedia Commons, the free media repository.

Retrieved 23:09, August 13, 2021

### Appendix D: Power Interest Grid Communication Plan

<table>
<thead>
<tr>
<th>Level of Power</th>
<th>Keep Satisfied</th>
<th>Manage Closely</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Power, Low Interest</strong></td>
<td>Clinic Manager</td>
<td>Endocrinology Providers</td>
</tr>
<tr>
<td></td>
<td>Clinic Supervisor</td>
<td>Diabetes Educator Supervisor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Patients</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Monitor</strong></th>
<th>Low Power, Low Interest</th>
<th>Keep Informed</th>
<th>Low Power, High Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low Power, Low Interest</strong></td>
<td>Medical Assistants</td>
<td>Patient Families</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patient Service Representatives</td>
<td>Diabetes Educator RN Staff</td>
<td></td>
</tr>
</tbody>
</table>

### Stakeholder Analysis using a Power Interest Grid

The above figure explains the different approaches we should have for the segregated/prioritized stakeholders.

- **High power - High interest**: these are the stakeholders who are decision-makers and have the biggest impact on the project’s success hence you must closely manage their expectations.
- **High power - Low Interest**: these are the stakeholder needed to be kept in loop. These stakeholders need to be kept satisfied even though they aren’t interested because they yield power. These types of stakeholders should be dealt with cautiously as well since they may use their power in a not desired way in the project if they become unsatisfied.
- **Low power – High interest**: keep these people adequately informed, and talk to them to ensure that no major issues are arising. These people can often be very helpful with the detail of your project.
- **Low power - low interest**: monitor these people, but do not bore them with excessive communication.

### References:

https://www.mindtools.com/pages/article/newPPM_07.htm
Appendix E: Project Charter

Project Charter: Enhancing Diabetic Patient Continuous Glucose Monitoring Access

Global Aim:
To implement a standardized process of diabetic patient Continuous Glucose Monitoring (CGM) preparation for use or education by August 2023 at the endocrinology clinic in Western Washington.

Specific Aim:
To decrease the amount of provider and diabetes educator time spent educating diabetic patients in the endocrinology clinic by 50% after implementing a standardized CGM device protocol within six months (08/01/2023).

Background:
Diabetes affects over 37 million people in the United States, and another 88 million are prediabetic (Centers for Disease Control and Prevention [CDC], 2020). Continuous Glucose Monitoring (CGM) is more commonly used for diabetes management as time in range is becoming more prevalent as a measure of diabetes outcomes. “Continuous glucose monitoring automatically tracks blood glucose levels, also called blood sugar, throughout the day and night” (U.S. Department of Health and Human Services, 2017, “What is continuous glucose monitoring” section). The benefits of CGM use include better management of glucose levels daily, fewer hypoglycemic emergencies, and fewer finger sticks (USDHHS, 2017). Healthcare providers can utilize the summarized data collected by CGMs to make clinical decisions for diabetes management. Some people with diabetes find CGM use more accessible than fingersticks and glucometers, improving their adherence to a diabetes regimen. However, older adults have difficulty facilitating new CGM technology and may require further reinforcement through the use of additional education methods such as teach-back.

Sponsors
• Endocrinology Clinic Manager
• Endocrinologist Providers
• Diabetic Educator Nurses

Interventions: To standardize the implementation of a CGM in diabetic patient care at the endocrinology clinic, a multifaceted team approach for the endocrinology and diabetes educator clinic will include the following:
1. Develop a standard process for preparing patients for CGM education and use.
2. Develop process support checks and measures to catch any patients who are unable to progress through this process.
3. Implement the process in which patients with CGM devices are received during clinic visits.

Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Data Source</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of clinic visit time</td>
<td>Provider and Diabetes</td>
<td>Decrease by 50%</td>
</tr>
<tr>
<td>dedicated to CGM set-up with</td>
<td>Educator survey</td>
<td></td>
</tr>
</tbody>
</table>
providers and Diabetes Education Clinic is reduced.

<table>
<thead>
<tr>
<th>Percentage of correctly identified CGM access knowledge from staff</th>
<th>Staff Education Survey</th>
<th>Average score of Staff Education Survey improve by 50%</th>
</tr>
</thead>
</table>

**Process**

<table>
<thead>
<tr>
<th>Amount of time dedicated per provider per patient for CGM set-up in Endocrinology and Diabetes Education Clinic (monitored via a survey)</th>
<th>Provider and Diabetes Educator survey</th>
<th>&lt;25% of provider clinic visit</th>
</tr>
</thead>
</table>

**Balancing**

<table>
<thead>
<tr>
<th>Clinic staff feedback through surveys or detailed log of time dedicated for CGM device download and set-up</th>
<th>Endocrinology Clinic Staff Survey</th>
<th>&lt;25% of healthcare provider clinic visit</th>
</tr>
</thead>
</table>

**Team**

- Team coordinator
- Financial advisor
- Diabetes Educator Advisor
- Endocrinology MDs
- Endocrinology ARNP
- Endocrinology MAs
- Endocrinology RN
- Diabetes Educator RNs

**Measurement Strategy**

**Data Collection Method:** Data will be collected from a retrospective randomized sample of 9 patient records to establish a baseline. After the baseline data is established, ten patient records will be reviewed weekly for the project measures during three months in 2023. The data plan will be reevaluated every month based on the results. To test healthcare provider understanding, a pre and post CGM education survey will be conducted prior to and after the improvement is implemented.

**Measure Description**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Measure Definition</th>
<th>Data Collection Source</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of clinic visit time dedicated to CGM set-up with providers and Diabetes Education Clinic is reduced</td>
<td>CGM-T= amount of time during the clinic visit dedicated to preparing a patient for CGM use CT = number of minutes dedicated to a patient visit</td>
<td>Team coordinator generated survey for Providers and Diabetes Educators</td>
<td>Decrease by 50%</td>
</tr>
<tr>
<td>Amount of time dedicated per provider per patient for CGM set-up in Endocrinology and Diabetes Education Clinic (monitored via a survey)</td>
<td>CGM-T= amount of time during the clinic visit dedicated to preparing a patient for CGM use CT = number of minutes dedicated to a patient visit</td>
<td>Team coordinator generated a survey for Providers and Diabetes Educators</td>
<td>&lt;25% of provider clinic visit</td>
</tr>
</tbody>
</table>


### Appendix F
Implementation Timeline

<table>
<thead>
<tr>
<th>January – February</th>
<th>February – March</th>
<th>April-May</th>
<th>May-June</th>
<th>June - July</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Evaluation of the current process from prescription to patient access</td>
<td>• Determination of additional resources available to the clinic</td>
<td>• Gather data and log timelines for patient prescription to first use</td>
<td>• Educate staff based on the nursing role and integration into workflow</td>
<td>• Initial Evaluation of the new solutions in place</td>
</tr>
<tr>
<td>• Determination of all the stakeholders in the process</td>
<td>• Determine major obstacles to patient care</td>
<td>• Determine the feasibility of the existing staff to adopt a nurse education intervention</td>
<td>• Implementation of a nurse education intervention</td>
<td></td>
</tr>
</tbody>
</table>
### Appendix G

#### Gantt Chart

<table>
<thead>
<tr>
<th>Task#</th>
<th>Description of Tasks and Communication Interventions</th>
<th>2023</th>
<th>Responsible Party/ Stakeholder</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Determination of the current process from prescription to access for the patient</td>
<td>Feb</td>
<td>Mar</td>
<td>Apr</td>
</tr>
<tr>
<td></td>
<td>Determining clinic- controlled factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Determining what additional resources are available to the clinic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Determining the 3 most significant obstacles causing delays in patient care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Determine which staff are impacted by the new intervention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gathering baseline data for provider dedicated clinic time to CGM preparation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Creating and documenting a proposed standardized process for CGM preparation in clinic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implementation of the nurse based CGM education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Surveys to the staff for data evaluation and knowledge of CGM access intervention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reevaluation for unexpected needs for the interventions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Revisions of process to accommodate clinic-based needs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Evaluation of results from baseline to post-intervention</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Congratulations on your new blood sugar monitoring device! We have created a checklist to prepare you for the next steps in using your new Continuous Glucose Monitor (CGM).

**YOUR SUPPLIES WILL ONLY COME FROM ONE SOURCE**

**PHARMACY**

- Location ______________________
- Timeline: 2 weeks
- Extra Information
  - There may be delayed times related to need for authorization
- Please contact the Pharmacy for your fill of CGM Device

**DURABLE MEDICAL EQUIPMENT**

- Company __________________________
- Timeline: 4 weeks
- Contact Information ________________
- Extra Information
  - This company will contact you via a “1-800” number to coordinate delivery of your supplies
  - There may be delayed times related to need for authorization

**SMART PHONE OR RECEIVER (RECEIVING DEVICE)**

**SMART PHONE USERS**

- Please download the appropriate apps below depending on your CGM System
- Username: ________________________
- Password: ________________________

### Dexcom Systems
- Dexcom G6
- Dexcom G7
- Dexcom Clarity

### Freestyle Libre System
- Freestyle Libre Link
- Freestyle Libre 2
- Freestyle Libre 3

**RECEIVER USERS**

- If your smartphone is not compatible with the necessary apps
- You will receive this through your pharmacy or DME company

**DO YOU HAVE ALL OF YOUR SUPPLIES?**

<table>
<thead>
<tr>
<th>Dexcom</th>
<th>Freestyle Libre</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ RECEIVING DEVICE</td>
<td>☐ RECEIVING DEVICE</td>
</tr>
<tr>
<td>☐ SENSORS</td>
<td>☐ SENSORS</td>
</tr>
<tr>
<td>☐ TRANSMITTERS (G6 AND OLDER)</td>
<td></td>
</tr>
</tbody>
</table>

If everything is completed, please continue to your upcoming appointment on:

**Contact Info**

- Endocrinology Clinic (425)289-3130
- Diabetes Education (425)688-5111
Appendix I
Budget and Cost Avoidance

Enhancing Diabetic Patient CGM Access

Implementation Costs

<table>
<thead>
<tr>
<th>Staff Education</th>
<th>hourly wage*</th>
<th>4 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA – 4 assistants</td>
<td>$17.88</td>
<td>$286.08</td>
</tr>
<tr>
<td>RN - outpatient setting</td>
<td>$44.74</td>
<td>$178.96</td>
</tr>
<tr>
<td>ARNP</td>
<td>$58.02</td>
<td>$232.08</td>
</tr>
<tr>
<td>MD – 3 providers</td>
<td>$100.00</td>
<td>$1,200.00</td>
</tr>
</tbody>
</table>

| Educational Materials - handouts/ training devices | 200 |
| Development of Educational Program for Patients - Project Manager | 400 hours | $17,896.00 |

*Rate per healthcare provider based of median wage not including benefits according to the U.S. Bureau of Labor Statistics 2021

Total Costs: $19,793.04

Improvement Revenue (Cost Avoidance) Annually

<table>
<thead>
<tr>
<th>Patient Communication with the Clinic - Registered Nurse Response (1 hour/day)</th>
<th>daily</th>
<th>monthly</th>
<th>annually</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$44.74</td>
<td>$894.80</td>
<td>$10,737.60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reduced Patient-Provider Clinical Office Visit Time (1 hour/provider/day)</th>
<th>daily</th>
<th>monthly</th>
<th>annually</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Doctors - 3</td>
<td>$300.00</td>
<td>$6,000.00</td>
<td>$72,000.00</td>
</tr>
<tr>
<td>ARNP - 1</td>
<td>$58.02</td>
<td>$1,160.40</td>
<td>$13,924.80</td>
</tr>
<tr>
<td>Diabetic Educators (RN) – 3</td>
<td>$134.22</td>
<td>$2,684.40</td>
<td>$33,212.80</td>
</tr>
</tbody>
</table>

Total Revenue/Cost Avoidance

$536.98 | $10,739.60 | $128,875.20

Calculations based on:
- 1.0 FTE
- 10 hour work day
- Medical Doctors see 16 patients daily
- Advanced Registered Nurse Practitioner see 10 patients daily
- Diabetic Educators see 8 patients daily
- 8736 patients/year or 728 patients/month

Project Savings

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2 total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation Costs</td>
<td>$19,793.12</td>
<td>$39,586.24</td>
</tr>
<tr>
<td>Cost Avoidance Annually</td>
<td>($128,875.20)</td>
<td>($257,750.40)</td>
</tr>
<tr>
<td>Net Benefit</td>
<td>($109,082.08)</td>
<td>($218,164.16)</td>
</tr>
</tbody>
</table>
Appendix J

Patient CGM Access Survey

Why?
To standardize and ultimately improve the process in which patients are receiving their CGM devices and set-up.

How many minutes of this visit was dedicated to CGM set-up, including items such as:
- Patient not having their CGM device account set-up (Libre/Dexcom)
- Patient does not have all their supplies
- Patient does not have the correct apps
- Smart phone incompatibility

________

How many minutes this visit was assigned for:

________

Purpose of the visit
☐ Patient CGM Start (New Device Teaching)
☐ Consultation
☐ Follow-Up

Please rate the quality of patient CGM preparedness
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Disappointing Exceptional

Please share any comments or suggestions
____________________________________________________________________________________________
____________________________________________________________________________________________
____________________________________________________________________________________________
____________________________________________________________________________________________
### Appendix K

**Staff Education Survey**

**Patient CGM Access Survey**

**How Come?**

We are committed to providing patients the best possible care through our ability communicate accurate information. You have been selected as a point of contact for patient care regarding Continuous Glucose Monitor (CGM). Please complete the following questions and return to:  
Colleen.ildefonso@overlakehospital.org

Thank you.

Where can a patient receive personal CGM supplies? (select all that apply)
- Pharmacy
- Provider’s Office
- Diabetes Educator’s Office
- Durable Medical Equipment (DME) Company

What is the longest wait time for CGM supplies?
- 3 days
- 1 week
- 2 weeks
- 4 weeks
- 2 months

What are the two main CGM systems that Overlake Endocrinology Uses? (select 2)
- Freestyle Libre
- Guardian Monitor
- Tandem
- Dexcom
- Omnipod
- Medtronic

If a patient has a referral to the Diabetes Education Clinic, what number can they call?
- (425)289-3130
- (425)688-5111
- (425)688-5700, option 2
- (425)289-3100

Thank you for completing this knowledge check!  
Please forward your completed form to:  
[Colleen.ildefonso@overlakehospital.org](mailto:Colleen.ildefonso@overlakehospital.org)
Appendix L

CNL Project: Statement of Non-Research Determination Form

Student Name: __Colleen Ildefonso______________________________

<table>
<thead>
<tr>
<th>Title of Project:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhancing Diabetic Patient CGM Access</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Brief Description of Project:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A) Aim Statement:</strong></td>
</tr>
<tr>
<td>To decrease the amount of provider and diabetes educator time spent educating diabetic patients in the endocrinology clinic by 50% after implementing a standardized CGM device protocol within six months (08/01/2023).</td>
</tr>
</tbody>
</table>

| **B) Description of Intervention:** |
| To standardize the implementation of a CGM in diabetic patient care at the endocrinology clinic, a multifaceted team approach for the endocrinology and diabetes educator clinic |

| **C) How will this intervention change practice?** |
| This intervention will reduce the time patient have access to this device, enhance provider assessment of patient, and |

| **D) Outcome measurements:** |
| - Percentage of clinic visit time dedicated to CGM set-up with providers and Diabetes Education Clinic is reduced |
| - Amount of time dedicated per provider per patient for CGM set-up in Endocrinology and Diabetes Education Clinic (monitored via a survey) |
| - Clinic staff feedback through surveys or detailed log of time dedicated for CGM device download and set-up |

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: (http://answers.hhs.gov/ohrp/categories/1569)

☑ This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Student may proceed with implementation.

☑ This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

Comments:
**EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST** *

Instructions: Answer YES or NO to each of the following statements:

<table>
<thead>
<tr>
<th>Project Title:</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>The aim of the project is to improve the process or delivery of care with established/accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The specific aim is to improve performance on a specific service or program and is a part of usual care. ALL participants will receive standard of care.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The project is NOT designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does NOT follow a protocol that overrides clinical decision-making.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does NOT develop paradigms or untested methods or new untested standards.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does NOT seek to test an intervention that is beyond current science and experience.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The project has NO funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., not a personal research project that is dependent upon the voluntary participation of colleagues, students and/or patients.</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: “This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board.”**

**ANSWER KEY:** If the answer to ALL of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research. **IRB review is not required. Keep a copy of this checklist in your files.** If the answer to ANY of these questions is NO, you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.*
STUDENT NAME (Please print): Colleen Ildefonso

Signature of Student: ___DATE 04/16/2023

[Signature]

Colleen Ildefonso

Signed by: b2a1d933-07c2-4686-9a42-d586c0fbc051

SUPERVISING FACULTY MEMBER NAME (Please print): Elena Capella

Signature of Supervising Faculty Member

Elena Capella 04/17/23

____________________________________DATE___________
Appendix M
Staff Education Presentation

Enhancing Diabetic Patient Continuous Glucose Monitoring (CGM): Improving Access Through a Checklist

Colleen Doyle, RN

Introduction
The presentation will introduce you to the process from when a patient first receives an order for a CGM to the follow-up appointment with their diabetes healthcare provider while also following the order of the CGM.

Personal CGM Supplies
- Will only come from 2 sources:
  - Pharmacy
  - Up to 2 weeks
  - Pharmacy Insurance Benefit
  - Durable Medical Equipment (DME) Companies
  - Up to 4 weeks
  - Coordination of delivery
  - Medical Insurance Benefit

CGM Access Checklist

Device Associated Applications
- InSync
- Dexcom
- Freestyle Libre

Devices and their Applications

Receiving Devices
- Receivers
  - Patients whose phones are not compatible with device apps
  - Those who do not use a receiver with their CGM
- Smartphones
  - Receivers
    - Access to downloading apps
    - Access to a device account
**Important Contact Information for Patients**

Endocrinology OSHC
(423) 391-3131
Diabetic Education-Scheduling
(423) 888-5720 — option 3

---

**Final Check**

- Patient has all supplies
- If using a cell phone:
  - Right Apps
  - Username and Passwords for Apps and phone
- Patient has appropriate resources
- Ready for appointment

---

**Thank You**

Colleen Liddicoat
Colleen.Liddicoat@memhospitals.org
x3131
# Appendix N

## Staff Education Summary

### CGM Access Checklist

Our patients now have access to a CGM device, here is the process from the point of prescription (from an Endocrinologist) to the follow-up.

---

#### THE PATIENT WILL RECEIVE PERSONAL CGM SUPPLIES THROUGH ONLY ONE OF THESE ROUTES:

<table>
<thead>
<tr>
<th>PHARMACY</th>
<th>DURABLE MEDICAL EQUIPMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Commercial patients often have coverage of supplies through a pharmacy benefit.</td>
<td>1. Many Medicare and certain commercial insurances require patients have coverage of supplies through their medical benefit.</td>
</tr>
<tr>
<td>2. The timeline for PA with a pharmacy benefit may take up to 2 weeks for receiving the PA request, then determination by the insurance company</td>
<td>2. Durable Medical Equipment companies will coordinate delivery of patient supplies directly to the patient.</td>
</tr>
<tr>
<td></td>
<td>a. Please note that these companies may contact patients using a “1-800” number</td>
</tr>
<tr>
<td></td>
<td>b.</td>
</tr>
<tr>
<td></td>
<td>3. The arrival of supplies can take up to 4 weeks due to PA needs, coordination of delivery.</td>
</tr>
</tbody>
</table>

---

#### RECEIVING DEVICE

**SMART PHONE VS. RECEIVER**

- **SMART PHONE USERS**
  - Patients must download the appropriate apps associated with the device they are using.

- **RECEIVER USERS**
  - If a patient’s smartphone is not compatible, they will require a receiver associated with the prescribed device.

### Dexcom Systems vs Freestyle Libre System

<table>
<thead>
<tr>
<th>Dexcom</th>
<th>Freestyle Libre</th>
</tr>
</thead>
<tbody>
<tr>
<td>G6</td>
<td>Freestyle Libre</td>
</tr>
<tr>
<td>G7</td>
<td>Freestyle Libre 14-day</td>
</tr>
<tr>
<td>Always needed</td>
<td>Freestyle Libre Link</td>
</tr>
<tr>
<td></td>
<td>Freestyle Libre 2</td>
</tr>
<tr>
<td></td>
<td>Freestyle Libre 3</td>
</tr>
</tbody>
</table>

---

#### DOES THE PATIENT HAVE ALL OF THEIR SUPPLIES?

<table>
<thead>
<tr>
<th></th>
<th>Freestyle Libre</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECEIVING DEVICE</td>
<td></td>
</tr>
<tr>
<td>SENSORS</td>
<td></td>
</tr>
<tr>
<td>TRANSMITTERS (G6 AND OLDER)</td>
<td></td>
</tr>
</tbody>
</table>

If everything is completed, please continue to your upcoming appointment on:

---

### Contact Info

- **Endocrinology Clinic**
  - (425) 289-3130
- **Diabetes Education**
  - (425) 688-5700 - option 5
Appendix: O
Resulting Data

Patient Education Results

<table>
<thead>
<tr>
<th>Quality Measure</th>
<th>Before Intervention</th>
<th>After Intervention</th>
<th>After Intervention without Outliers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Quality of Follow-Up Visits</td>
<td>4.88</td>
<td>4.4</td>
<td>5</td>
</tr>
<tr>
<td>Average Time Lost (minutes)</td>
<td>1.44</td>
<td>10.2</td>
<td>0.25</td>
</tr>
<tr>
<td>Total Time Lost (minutes)</td>
<td>13</td>
<td>51</td>
<td>1</td>
</tr>
<tr>
<td>Total Visit Time (minutes)</td>
<td>200</td>
<td>160</td>
<td>100</td>
</tr>
<tr>
<td>Percentage of Time Lost During the Visit</td>
<td>7%</td>
<td>32%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Staff Education Results

![Bar chart showing improvements in number of questions correct and percentage of questions correct pre-intervention and post-intervention.](chart.png)