Executive Summary: Continuous Glucose Monitoring Implementation in Primary Care

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Improving Clinician Attitudes Toward Continuous Glucose Monitoring Implementation in Primary Care

The incidence of Type 2 Diabetes Mellitus (T2DM) and its related complications remains a major public health concern, characterized by rising healthcare expenses and increased morbidity due to preventable complications (American Diabetes Association, 2018). Continuous Glucose Monitoring (CGM) is an essential tool that clinicians can utilize in diabetes management. This technology provides real-time glycemic data that can better guide treatment interventions that aid in improving patient outcomes, yet its adoption in primary care is limited due to various barriers and challenges (Oser et al., 2022; Petra, 2022).

Purpose

This Quality Improvement (QI) initiative aimed to enhance clinicians' attitudes and confidence in CGM initiation and utilization in the management of patients with Type 2 Diabetes Mellitus (T2DM) in the primary care setting. These findings highlight both the progress and challenges related to the integration of this diabetes technology into clinical practice and offer a roadmap for future improvements and research.

Key Findings

- **Statistical Improvements in Specific Areas**: Quantitative analysis revealed statistically significant improvements in specific survey questions, particularly those related to obtaining, interpreting, and applying CGM data to patient care.
- **Identification of CGM Eligible Patients**: Chart audits successfully identified several eligible patients who could potentially benefit from CGM initiation, based on current health profile, which underscores the potential for broader application.

- **Feedback Related to Educational Content**: The educational module received positive feedback and clinician responses revealed appreciation and value in focused information related to CGM. Indicating that targeted educational efforts can successfully enhance the adoption of this diabetes technology.
- **Persistent Educational Gaps**: Despite notable improvements overall, specific areas such as the integration of CGM data into daily practice and overcoming specific challenges like billing and insurance complexities, showed minimal improvement and require additional focus and attention.
- **Importance of Continuous Education**: Findings indicate the role of continuing education for clinicians. The findings emphasize the importance of ongoing education and support to maintain and enhance clinician knowledge and confidence in using advanced diabetes management technologies like CGM.
- **Persistent Barriers to Complete Implementation**: Technical issues, clinician time constraints, and resistance to change were identified as significant barriers to the full optimization and implementation of CGM use in clinical practice.

Methodology

This project utilized the Plan-Do-Study-Act (PDSA) framework over a period of approximately 14 months in an ambulatory primary care setting. The project involved developing an educational module delivered electronically for clinicians to complete on their own time. In addition, pre- and post-assessment surveys were also delivered electronically, to evaluate the effectiveness of an educational module designed to increase clinician knowledge and confidence surrounding CGM. Chart audits were performed to identify potential patients that may benefit from CGM discussion and initiation if eligibility requirements had been met.

Results

Interventions significantly enhanced clinician knowledge and confidence in several aspects of CGM implementation. Survey responses revealed increased understanding and confidence in CGM data interpretation and application to patient care. Furthermore, other specific areas did not reveal improvement, suggesting the need for more targeted and focused educational initiatives. Key outcomes included significant improvements in clinician confidence and understanding in using CGM overall, in addition, the project revealed challenges to integration with electronic health records (EHR) and resistance to adopting innovative diabetes technology, despite evidence-based benefits to patient care.

Strengths and Limitations

Strengths of this project involved a comprehensive educational approach to CGM, utilizing a structured educational module tailored to address specific knowledge gaps among clinicians related to Continuous Glucose Monitoring (CGM) technology. The targeted module significantly enhanced understanding and confidence in using CGM. To gauge the effectiveness of educational interventions, pre- and post- assessment surveys were utilized, providing measurable, quantitative feedback on clinician knowledge and attitudes. This data-drive approach provided a clear view of progress and areas where knowledge gaps remained. Additionally, the PDSA cycle allowed for a systematic methodology for change initiation, evaluating outcomes, and planning further modifications to implementation, aligning with best practices in quality improvement. Involving a diverse array of clinical staff, ranging from attending physicians, resident physicians, and advance practice providers further enriched the project, as this inclusiveness allowed for a variety of perspectives and experiences, which further enhanced the overall input and engagement in this initiative.

This project faced several limitations throughout its implementation which impacted its outcomes and the potential implications. A small sample size restricted the number of participants, which impacted its generalizability of the results, and potentially introduced selection bias, as various perspectives may influence the adoption of this diabetes technology. Additionally, clinician time constraints and the method of delivery may have impacted engagement. The busy schedules of healthcare providers limited the time they could dedicate to complete the educational module, potentially affecting the depth of engagement with the training material and feedback, which would impact the overall effectiveness of the intervention. Technological and administrative barriers also posed significant challenges to the implementation of this project, including concerns of confidentiality when integrating CGM data into patient's electronic health records (EHR) and complexities with policy and protocol development and approval, some of which were not fully resolved during the project timeline and significantly impacted Furthermore, some clinicians demonstrated resistance to adopting new practices and changes in workflow required for CGM implementation, which can be difficult in a busy clinical settings. This resistance to change can delay the implementation of innovative and evidence-based technologies, such as CGM, and can negatively impact patient outcomes. Lastly, the short duration of project implementation did not allow for long-term follow-up to assess sustained changes in clinical behavior and attitudes, or patient outcomes, which is essential in determining the lasting impact, or legacy of the intervention.

Implications

Implications of this project on the use of Continuous Glucose Monitoring (CGM) in primary care are significant and multifaceted and may influence both clinical practice and future research. Future implications of this project include the potential for developing policy and

protocol recommendations, optimizing clinic workflows to improve healthcare delivery efficiency, and guiding further research to address persistent knowledge gaps and assessing long-term impacts on health outcomes. This project highlights the need for and importance of continuous education and systemic support for clinicians, to enhance the adoption and implementation of evidence-based diabetes technology in clinical settings.

Conclusion

Despite significant challenges to project implementation this Quality Improvement (QI) initiative not only demonstrates the potential benefits of targeted educational efforts to increase CGM utilization, but also lays the foundation for broader and systemic changes in altering clinicians' approach to diabetes management. Outcomes of this project could be generalized on a larger scale and provide critical insights in shaping future strategies and approaches for integrating CGM and other innovative technology for diabetes management into routine clinical practice to successfully impact patient outcomes and patient satisfaction through empowerment and education.

References

American Diabetes Association. (2018). Economic costs of diabetes in the U.S. In 2017. *Diabetes Care*, *41*(5), 917–928. https://doi.org/0.2337/dci18-0007

American Diabetes Association. (2023). *Economic Report News Release*. Diabetes Statistics. https://diabetes.org/newsroom/press-releases/new-american-diabetes-association-report-finds-annual-costs-diabetes-be.

Oser, T. K., Hall, T. L., Dickinson, L. M., Callen, E., Carroll, J. K., Nease, D. E., Jr, Michaels, L., & Oser, S. M. (2022). Continuous Glucose Monitoring in Primary Care: Understanding and Supporting Clinicians' Use to Enhance Diabetes Care. *Annals of family medicine*, *20*(6), 541–547. https://doi.org/10.1370/afm.2876

Petra, K. (2022). Improving the value of healthcare systems using the Triple Aim framework: A systematic literature review. *Health Policy*, *126*(4), 302–309. https://doi.org/10.1016/j.healthpol.2022.02.005