

Original Paper

# A Team-Based Training for Continuous Glucose Monitoring in Diabetes Care: Mixed Methods Pilot Implementation Study in Primary Care Practices

Melissa K Filippi<sup>1</sup>, MPH, PhD; Angela M Lanigan<sup>1</sup>, MPA; Sean M Oser<sup>2</sup>, MPH, MD; Jillian Alai<sup>1</sup>, MPH; Alicia Brooks-Greisen<sup>1</sup>, BA; Tamara K Oser<sup>2</sup>, MD

<sup>1</sup>American Academy of Family Physicians, Leawood, KS, United States

<sup>2</sup>Department of Family Medicine, University of Colorado School of Medicine, Aurora, CO, United States

**Corresponding Author:**

Angela M Lanigan, MPA

American Academy of Family Physicians

11400 Tomahawk Creek Pkwy

Leawood, KS, 66211

United States

Phone: 1 9139066382

Email: [alanigan@aafp.org](mailto:alanigan@aafp.org)

## Abstract

**Background:** The American Academy of Family Physicians (AAFP) develops and maintains continuing medical education that is relevant to modern primary care practices. One continuing medical education modality is AAFP TIPS, which are comprised of resources designed for family medicine physicians and their care teams that aid in quick and accessible practice improvement strategies, with actionable steps. Evaluating physicians' use of and satisfaction with this modality's content and implementation strategies has not been prioritized previously. Continuous glucose monitoring (CGM) plays an increasing role in the treatment of diabetes; uptake occurs more rapidly in endocrinology settings than in primary care settings. To help address such differences in CGM uptake and diabetes care, AAFP TIPS on Continuous Glucose Monitoring (AAFP TIPS CGM) was developed, using published evidence and input from content experts (family medicine faculty; AAFP staff; and an advisory group comprised of other primary care physicians, patients, a pharmacist, and a primary care practice facilitator). A pilot implementation project was conducted in 3 primary care practices.

**Objective:** To evaluate AAFP TIPS CGM in primary care practices, the research team assessed use of and satisfaction with the content and assessed barriers to and facilitators for strategy and workflow implementation.

**Methods:** In total, 3 primary care practices participated in a mixed methods pilot implementation of AAFP TIPS CGM between June and October 2021. Practice champions at each site completed AAFP TIPS CGM and baseline practice surveys to evaluate practice characteristics and CGM prescribing. They conducted team trainings (via webinars or in person), with the goals of implementing CGM into practice and establishing or improving CGM workflows. Practice champions and team training participants completed posttraining surveys to evaluate the training, AAFP TIPS materials, and likelihood of implementing CGM. Interviews were conducted with 6 physicians, including practice champions, 2 months after team training. Satisfaction surveys were also distributed to those who completed the AAFP TIPS CGM course via the internet during the study period.

**Results:** Of the 3 practices, 2 conducted team trainings. The team training evaluation survey showed that practice staff understood their role in implementing CGM in practice (19/20, 95%), and most (11/20, 55%) did not have questions after the training. Insurance coverage for CGM was a remaining knowledge gap and potential barrier to implementing CGM in practice. Physicians and interdisciplinary care team members who took the AAFP TIPS CGM course via the internet, as well as those who attended in-person team training, expressed a high degree of satisfaction with the education, content, and applicability of the course.

**Conclusions:** This pilot implementation of AAFP TIPS CGM offers pertinent and timely information for primary care practices that desire to initiate or expand CGM use to best meet the needs of their patients with diabetes.

(*JMIR Form Res* 2023;7:e45189) doi: [10.2196/45189](https://doi.org/10.2196/45189)

**KEYWORDS**

continuous glucose monitoring; CGM; continuing medical education; CME; diabetes; evaluation; family physician; implementation; primary care; primary care practice; glucose; glucose monitoring; pilot study; workflow; medical education

**Introduction**

Continuous glucose monitoring (CGM) is recommended for many people with diabetes [1,2], including those with type 1 diabetes, type 2 diabetes treated with insulin, and type 2 diabetes treated with noninsulin regimens. CGM use continues to expand in different populations of people with diabetes [3-11]. Most people with diabetes receive their diabetes care in primary care settings [12,13]. Therefore, it is important to provide primary care physicians and advanced clinicians with education and tools for implementing CGM.

CGM is associated with improved hemoglobin A<sub>1c</sub> levels, decreased hypoglycemia, and improved quality of life, and it can reduce or replace the use of finger sticks for the self-monitoring of blood glucose [14,15]. The use of CGM can facilitate shared decision-making and treatment decisions between primary care teams and patients with diabetes [16]. CGM uptake in endocrinology and diabetes subspecialty settings has been higher than that in primary care settings [17-20]. Since most people receive their diabetes care in primary care settings [12,13], there have been recent efforts and resources for facilitating CGM implementation in primary care settings. The American Academy of Family Physicians (AAFP) TIPS on Continuous Glucose Monitoring (AAFP TIPS CGM) is one such effort.

AAFP TIPS are brief, interactive, web-based continuing medical education (CME) courses that focus on team-based tools and customizable team training slide decks, which are designed to assist physicians and care teams in making immediate practice improvements [21]. Team-based learning is a preferred method of learning for primary care and other specialties because care

delivery requires effort from multiple stakeholders and not just from individual physicians [22-28]. AAFP TIPS CGM was created to assist primary care physicians and clinicians in implementing CGM into practice workflows (ie, processes required for CGM prescribing and care). This paper describes barriers to and facilitators for a CGM pilot implementation in primary care practice workflows, including the use of and satisfaction with AAFP TIPS CGM content, and lessons learned for designing future CGM content that is tailored to primary care. This study is imperative, as it is the first implementation evaluation performed on the AAFP TIPS team-based learning platform.

**Methods****Intervention**

This mixed methods pilot implementation of the web-based AAFP TIPS CGM course assessed primary care practice adoption, experience, and feedback during the immediate 6 months following the course's launch (April 16, 2021, through October 19, 2021). The course has a variety of education topics and resources (Table 1 and Figure 1).

A physician practice champion enrolled in and completed AAFP TIPS CGM. Team-based trainings, which roughly mirrored course lessons, were designed to be customizable by practice champions. Each slide deck took about 30 minutes to present. Practice champions were encouraged to present a team training within 30 days of completing the course, utilizing the slide decks and facilitator guide. They ultimately determined how and when to implement team trainings and which resources and slide decks to present.

**Table 1.** AAFP TIPS CGM<sup>a</sup> lesson topics and tools.

Lesson	Topics	Tools (unless noted, tools are practice facing)
Lesson 1	<ul style="list-style-type: none"> <li>Background and overview of CGM<sup>b</sup></li> <li>Types of CGM</li> </ul>	<ul style="list-style-type: none"> <li>CGM overview handout</li> </ul>
Lesson 2	<ul style="list-style-type: none"> <li>Overview of American Diabetes Association Standards of Medical Care in Diabetes</li> <li>Case studies</li> <li>Identifying patients who may benefit from CGM</li> </ul>	<ul style="list-style-type: none"> <li>Patient CGM identification tool (handout)</li> <li>Perceived benefits and burdens of CGM scales (surveys)</li> </ul>
Lesson 3	<ul style="list-style-type: none"> <li>Educating patients about CGM</li> <li>Shared decision-making</li> <li>Interpreting CGM data and reports</li> <li>Using CGM to inform treatment adjustments</li> <li>Case examples</li> </ul>	<ul style="list-style-type: none"> <li>Components of a continuous glucose monitor (handout)</li> <li>Patient-facing DiabetesWise.org website guide (handout)</li> <li>Key CGM measures (handout)</li> <li>Patient-facing handout</li> </ul>
Lesson 4	<ul style="list-style-type: none"> <li>Practice workflow and integration</li> <li>Ordering CGM</li> <li>Documentation</li> <li>Billing</li> <li>Follow-up</li> <li>Keeping updated</li> <li>Quality improvement</li> </ul>	<ul style="list-style-type: none"> <li>Sample prescription order for CGM supplies</li> <li>Sample CGM practice checklist for personnel (workflow)</li> <li>Coding and billing for CGM (handout)</li> <li><i>The Case for CGM</i> (PowerPoint [Microsoft Corporation] team training presentation)</li> <li><i>Understanding CGM</i> (PowerPoint team training presentation)</li> <li>CGM Staff Roles (PowerPoint team training presentation)</li> <li>Facilitator guide for roles, tasks, and workflow activities</li> <li><i>CGM Quality Improvement</i> (PowerPoint team training presentation)</li> <li>Quality improvement planning worksheet</li> <li>CGM run chart</li> <li>Helpful links</li> <li>Patient registry example</li> </ul>

<sup>a</sup>AAFP TIPS CGM: American Academy of Family Physicians TIPS on Continuous Glucose Monitoring.

<sup>b</sup>CGM: continuous glucose monitoring.

**Figure 1.** Screenshot of the AAFP TIPS CGM course landing page. AAFP TIPS CGM: American Academy of Family Physicians TIPS on Continuous Glucose Monitoring.

The screenshot shows the landing page for the AAFP TIPS CGM course. At the top, there is a breadcrumb trail: "AAFP TIPS: Continuous Glucose Monitoring ...". Below this, the main heading reads "AAFP TIPS: CONTINUOUS GLUCOSE MONITORING (CGM): ENHANCING DIABETES CARE, WORKFLOWS, EDUCATION, AND PAYMENT". The primary title is "CONTINUOUS GLUCOSE MONITORING". A "RETURN TO COURSE HOME" link is located in the top right corner. On the left, a "COURSE PROGRESS" sidebar shows a list of sections: "CONTINUOUS GLUCOSE MONITORING" (marked as "REQUIRED" and "NEW"), "TOOLS", "EVALUATION", "CREDIT", and "COMPLETE". Below the sidebar, the "COURSE NAVIGATION" section is partially visible with a "Next" button. The main content area is titled "CONTINUOUS GLUCOSE MONITORING:" and features a "Download All Resources" button. The first section is "1. BACKGROUND AND OVERVIEW", which states: "This course addresses the following learning objectives: 1. Review the importance of glycemia in diabetes care. 2. Define CGM and the available types of CGM." A "Start Course" button is positioned at the bottom of this section.

### Participants and Setting

A total of 3 primary care practices from the AAFP National Research Network were selected based on their interest and their ability to implement training within the study period. Physician champions at each site were both participants of this study and part of the team executing the intervention because of their role in teaching the team training. Interviews were conducted with physician champions and additional physicians at one site.

Beyond the three participating practices, the course was available to the public from April 16, 2021, until April 15, 2023.

### Outcome Measures

Practice champions completed a baseline practice survey about practice characteristics, the patient population with diabetes, and CGM use. Upon completion of a team training, practice champions and team training participants completed an anonymous, web-based evaluation that assessed satisfaction with course materials and comfort with implementing CGM workflows. Practice champions completed a CGM use postsurvey 2 months after team training. Physician training participants were invited to participate in a semistructured interview.

Course satisfaction was measured with a standard CME evaluation survey that is included in AAFP CME. Everyone who completed the final lesson of the course was presented with an optional CME evaluation. Evaluations completed between April 16, 2021, and September 30, 2021, were included in the analysis.

### Analysis

The data analysis included descriptive statistics for surveys and a deductive analytical approach for interview text (ie, rapid qualitative analysis) [29,30].

### Ethics Approval

This study was approved by the AAFP Institutional Review Board (protocol 21-412). Physician champions were consented via electronic consent. A waiver of documentation of informed consent was granted for survey respondents and interviewees. Survey respondents received a US \$25 e-gift card, and interviewees received a US \$100 e-gift card. All data were deidentified and stored on a secure server.

## Results

### Survey Results

Participating sites represented diverse practice types (a large multispecialty practice, a family medicine residency practice, and a single-physician practice). Table 2 presents practice characteristics, which were measured with survey responses.

Each site conducted customized team trainings that varied in terms of length, content, and attendees. The solo practice did not conduct formal team training, given the team’s small size. Physicians and interdisciplinary care team members who attended a team training reported a high degree of satisfaction with the training, content, and applicability of information (Table 3). Practice champions did not report how many people attended training at each site or how many declined to attend. We also do not know if other physicians or staff at each site completed the course via the internet. Practice staff who completed the team training evaluation (n=20) reported understanding their role in a CGM workflow (19/20, 95%). Over half of the respondents (11/20, 55%) indicated that they had no questions or concerns about CGM or CGM workflows, and 25% (5/20) reported questions or concerns about insurance coverage (Table 4). In accordance with AAFP standards for web-based CME evaluation, no posttraining knowledge test was given.

**Table 2.** Practice demographics of evaluation sites (n=3).

Site number	Practice type	Clinicians at the site, n	Patients by sex in clinics, %		Greater than 20% of practice population includes racial minority patients	Greater than 10% of patient population includes Hispanic or Latinx patients	Payer mix
			Male	Female			
1	Primary care only	1	40	60	Yes	Yes	Medicare: 40%; Medicaid: 15%; both Medicare and Medicaid: 0%; commercial insurance: 40%; uninsured: 5%; other: 0%
2	Community-based residency center	≥21	51	49	Yes	No	Medicare: 20%; Medicaid: 60%; both Medicare and Medicaid: 10%; commercial insurance: 7%; uninsured: 3%; other: 9%
3	Academic-based residency center	≥21	46	54	Unsure	Yes	Medicare: 19%; Medicaid: 5%; both Medicare and Medicaid: 5%; commercial insurance: 70%; uninsured: 0%; other: 1%

**Table 3.** Team training satisfaction results (n=20).

Items	Ratings					
	Rating, mean (SD)	5, n (%)	4, n (%)	3, n (%)	2, n (%)	1, n (%)
How do you rate the training materials (Power-Points, handouts, and interactive activities) overall? <sup>a</sup>	1.45 (0.6)	0 (0)	0 (0)	1 (5)	7 (35)	12 (60)
The training met my expectations <sup>b</sup>	1.2 (0.41)	0 (0)	0 (0)	0 (0)	4 (20)	16 (80)
I will be able to apply the knowledge I learned <sup>b</sup>	1.2 (0.41)	0 (0)	0 (0)	0 (0)	4 (20)	16 (80)
The content was organized and easy to follow <sup>b</sup>	1.35 (0.67)	0 (0)	0 (0)	2 (10)	3 (15)	15 (75)
The materials distributed were pertinent and useful <sup>b</sup>	1.2 (0.41)	0 (0)	0 (0)	0 (0)	4 (20)	16 (80)
Class participation and interaction were encouraged <sup>b</sup>	1.15 (0.37)	0 (0)	0 (0)	0 (0)	3 (15)	17 (85)
Adequate time was provided for questions and discussion <sup>b</sup>	1.35 (0.67)	0 (0)	0 (0)	2 (10)	3 (15)	15 (75)
I understand what role I will play in CGM <sup>c</sup> workflows <sup>b</sup>	1.4 (0.6)	0 (0)	0 (0)	1 (5)	6 (30)	13 (65)

<sup>a</sup>Ratings: 5=very poor; 4=poor; 3=average; 2=good; 1=excellent.

<sup>b</sup>Ratings: 5=strongly disagree; 4=disagree; 3=neutral; 2=agree; 1=strongly agree.

<sup>c</sup>CGM: continuous glucose monitoring.

**Table 4.** Team training results (n=20).

Question and responses	Respondents, n (%)
<b>After taking this training or series of trainings about CGM<sup>a</sup>, what questions and/or concerns do you have? (Mark all that apply)</b>	
I have no questions or concerns	11 (55)
I have questions or concerns about how CGM works	3 (15)
I have questions or concerns about how to introduce CGM to patients	2 (10)
I have questions or concerns about how to interpret CGM data	2 (10)
I have questions or concerns about my role/responsibilities in the CGM workflow	2 (10)
I have questions or concerns about insurance coverage for CGM for our practice's patients	5 (25)
I have questions or concerns about billing or coding for CGM	2 (10)
I have other questions or concerns (please specify)	0 (0)

<sup>a</sup>CGM: continuous glucose monitoring.

During the study period, 376 individuals completed AAFP TIPS CGM. Respondents who completed the CME evaluation (n=117) expressed high levels of satisfaction with the education, tools, and resources. An overwhelming majority (112/116, 96.6%) agreed or strongly agreed that they would recommend the

activity to colleagues (Table 5). Respondents to this survey were not necessarily study participants, and we were unable to determine if overlap existed between respondents and our team training evaluation.

**Table 5.** AAFP TIPS CGM<sup>a</sup> CME<sup>b</sup> evaluation survey results (n=117).

Items	Poor or strongly disagree, n (%)	Fair or disagree, n (%)	Good or neutral, n (%)	Very good or agree, n (%)	Excellent or strongly agree, n (%)
How well did this activity provide you with practical knowledge or strategies you can immediately apply to your practice? <sup>c</sup>	0 (0)	2 (1.7)	10 (8.5)	45 (38.5)	60 (51.3)
How would you rate the effectiveness of the tools? <sup>c</sup>	0 (0)	1 (0.9)	12 (10.4)	37 (32.2)	65 (56.5)
How well did this activity address barriers to your optimal patient management? <sup>c</sup>	0 (0)	3 (2.6)	19 (16.5)	42 (36.5)	51 (44.3)
I would recommend this activity to my colleagues <sup>d</sup>	0 (0)	1 (0.9)	3 (2.6)	45 (38.8)	67 (57.8)

<sup>a</sup>AAFP TIPS CGM: American Academy of Family Physicians TIPS on Continuous Glucose Monitoring.

<sup>b</sup>CME: continuing medical education.

<sup>c</sup>The responses for this item were “poor,” “fair,” “good,” “very good,” and “excellent.”

<sup>d</sup>The responses for this item were “strongly disagree,” “disagree,” “neutral,” “agree,” and “strongly agree.”

## Interview Results

A total of 3 practice champions and 3 other physicians at the community residency site were interviewed. Due to scheduling challenges, we were not able to interview physicians or clinicians at the academic residency. Physician interviewees (n=6) had little to no previous experience with prescribing CGM, but some had seen patients using a continuous glucose monitor prescribed by a specialist. Overall, they expressed the desire to be better informed about how to successfully prescribe CGM, answer patients' questions, and interpret CGM data to potentially improve patient outcomes.

Interviewees reported perceived benefits of CGM prescribing and CGM data interpretation, including alleviating reliance on specialists, bolstering decision-making with patients, influencing patient outcomes and behavior change, aiding adherence, and preventing discomfort issues with traditional blood glucose monitoring finger sticks.

With regard to course utility, participants thought that the course provided foundational knowledge for clinical care and data interpretation. Interviewees cited the *Interpreting CGM Data and Reports*, *Identifying Patients Who May Benefit from CGM*, and *Case Studies* lessons as the most useful lessons. The tools and resources were reported as helpful, but not all interviewees used every tool.

CGM prescribing workflows varied across sites because of differences in practice models, staffing, patient needs, and impacts of the COVID-19 pandemic. Interviewees cited barriers (eg, prior authorizations and insurance coverage, issues with workflow refinement and follow-up, and patient hesitancy) for incomplete CGM implementation at the time of interviews.

## Suggestions

Interviewees provided suggestions for course improvement, including expanding case studies (eg, electronic health record prescription navigation, patients with cognitive limitations or cognitive decline, and patients with financial concerns), adding more brand-specific information, including more professional CGM information, and refining some tools to specify physician tasks and staff tasks. Interviewees also suggested more

information on insurance authorization processes and local and regional particularities that impact obtaining continuous glucose monitors. Lastly, they wanted manufacturer resources (eg, samples and videos).

## Discussion

### Principal Findings

This study describes a pilot implementation of AAFP TIPS CGM—a course designed for physicians and care teams to initiate or expand CGM use in primary care practices. Respondents reported being highly satisfied with and informed by the course materials. Sites were able to modify or create new CGM prescribing workflows. Interviewees also had suggestions for additional content (eg, information on successful prescription and insurance authorization [31-33], strategies for helping uninsured or underinsured patients or those with limited means [33], greater detail on professional CGM [20,34-36], electronic health record navigation [33], and the use of samples [37]).

### Limitations

This study has limitations. This study's short duration, which was compounded with the implementation of new workflows during the COVID-19 pandemic, contributed to difficulties in implementing new steps. Further, navigating insurance authorizations presented challenges, and no one utilized billing and coding tools or practice checklist tools. Additionally, team trainings were inconsistent across sites. Practice champions developed in-person trainings, and sites did not include all training sections. We also did not measure pre- and post-CGM knowledge. Lastly, our sample of practices leaned heavily on residency programs.

### Conclusions

This pilot implementation offers pertinent and timely information for primary care practices seeking to initiate or expand CGM use to best meet the needs of their patients with diabetes. Although course information was relevant and useful, additional resources and strategies, especially those for insurance coverage and authorizations, would be helpful for successful CGM workflow implementation.

## Acknowledgments

The authors would like to note that AAFP TIPS is trademarked by the American Academy of Family Physicians (AAFP). This study was done in partnership with the AAFP through the AAFP National Research Network. The AAFP has not contributed to this publication, and the information, content, and conclusions are those of the authors. This study would not have been possible without the participation of the AAFP National Research Network practices, individual physicians, and care team members. We thank them for their essential contributions to this work. The authors would also like to thank Elizabeth Staton, MSTC, for her thorough review of the manuscript.

The authors disclose the receipt of the following financial support for the research, authorship, and publication of this article: this work was supported by a grant from Abbott Diabetes Care (no grant number).

## Data Availability

The data are hosted on the research team's internal servers and can be provided under reasonable request.

## Conflicts of Interest

TKO and SMO have served as consultants for DiabetesWise.org, Dexcom, and Medscape and have received grant funding for an investigator-initiated research study from Abbott Diabetes. The other authors report no disclosures.

## References

1. ElSayed NA, Aleppo G, Aroda VR, Bannuru RR, Brown FM, Bruemmer D, American Diabetes Association. 7. Diabetes technology: Standards of care in diabetes-2023. *Diabetes Care* 2023 Jan 01;46(Suppl 1):S111-S127 [FREE Full text] [doi: [10.2337/dc23-S007](https://doi.org/10.2337/dc23-S007)] [Medline: [36507635](https://pubmed.ncbi.nlm.nih.gov/36507635/)]
2. Grunberger G, Sherr J, Allende M, Blevins T, Bode B, Handelsman Y, et al. American Association of Clinical Endocrinology clinical practice guideline: The use of advanced technology in the management of persons with diabetes mellitus. *Endocr Pract* 2021 Jun;27(6):505-537. [doi: [10.1016/j.eprac.2021.04.008](https://doi.org/10.1016/j.eprac.2021.04.008)] [Medline: [34116789](https://pubmed.ncbi.nlm.nih.gov/34116789/)]
3. Liao Y, Schembre S. Acceptability of continuous glucose monitoring in free-living healthy individuals: Implications for the use of wearable biosensors in diet and physical activity research. *JMIR Mhealth Uhealth* 2018 Oct 24;6(10):e11181 [FREE Full text] [doi: [10.2196/11181](https://doi.org/10.2196/11181)] [Medline: [30355561](https://pubmed.ncbi.nlm.nih.gov/30355561/)]
4. Braune K, Wäldchen M, Raile K, Hahn S, Ubben T, Römer S, et al. Open-source technology for real-time continuous glucose monitoring in the neonatal intensive care unit: Case study in a neonate with transient congenital hyperinsulinism. *J Med Internet Res* 2020 Dec 04;22(12):e21770 [FREE Full text] [doi: [10.2196/21770](https://doi.org/10.2196/21770)] [Medline: [33275114](https://pubmed.ncbi.nlm.nih.gov/33275114/)]
5. Chiu CJ, Chou YH, Chen YJ, Du YF. Impact of new technologies for middle-aged and older patients: In-depth interviews with type 2 diabetes patients using continuous glucose monitoring. *JMIR Diabetes* 2019 Mar 21;4(1):e10992 [FREE Full text] [doi: [10.2196/10992](https://doi.org/10.2196/10992)] [Medline: [30789351](https://pubmed.ncbi.nlm.nih.gov/30789351/)]
6. Oser TK, Cucuzzella M, Stasinopoulos M, Moncrief M, McCall A, Cox DJ. An innovative, paradigm-shifting lifestyle intervention to reduce glucose excursions with the use of continuous glucose monitoring to educate, motivate, and activate adults with newly diagnosed type 2 diabetes: Pilot feasibility study. *JMIR Diabetes* 2022 Mar 23;7(1):e34465 [FREE Full text] [doi: [10.2196/34465](https://doi.org/10.2196/34465)] [Medline: [35050857](https://pubmed.ncbi.nlm.nih.gov/35050857/)]
7. Yost O, DeJonckheere M, Stonebraker S, Ling G, Buis L, Pop-Busui R, et al. Continuous glucose monitoring with low-carbohydrate diet coaching in adults with prediabetes: Mixed methods pilot study. *JMIR Diabetes* 2020 Dec 16;5(4):e21551 [FREE Full text] [doi: [10.2196/21551](https://doi.org/10.2196/21551)] [Medline: [33325831](https://pubmed.ncbi.nlm.nih.gov/33325831/)]
8. Depczynski B, Poynten A. Acceptance and effect of continuous glucose monitoring on discharge from hospital in patients with type 2 diabetes: Open-label, prospective, controlled study. *JMIR Diabetes* 2022 May 09;7(2):e35163 [FREE Full text] [doi: [10.2196/35163](https://doi.org/10.2196/35163)] [Medline: [35532995](https://pubmed.ncbi.nlm.nih.gov/35532995/)]
9. Ng AH, Greenwood DA, Iacob E, Allen NA, Ferrer M, Rodriguez B, et al. Examining a continuous glucose monitoring plus online peer support community intervention to support Hispanic adults with type 2 diabetes: Protocol for a mixed methods feasibility study. *JMIR Res Protoc* 2022 Feb 24;11(2):e31595 [FREE Full text] [doi: [10.2196/31595](https://doi.org/10.2196/31595)] [Medline: [35200153](https://pubmed.ncbi.nlm.nih.gov/35200153/)]
10. Griauzde DH, Ling G, Wray D, DeJonckheere M, Stout KM, Saslow LR, et al. Continuous glucose monitoring with low-carbohydrate nutritional coaching to improve type 2 diabetes control: Randomized quality improvement program. *J Med Internet Res* 2022 Feb 02;24(2):e31184 [FREE Full text] [doi: [10.2196/31184](https://doi.org/10.2196/31184)] [Medline: [35107429](https://pubmed.ncbi.nlm.nih.gov/35107429/)]
11. Juarascio AS, Srivastava P, Presseller EK, Lin M, Patarinski AGG, Manasse SM, et al. Using continuous glucose monitoring to detect and intervene on dietary restriction in individuals with binge eating: The SenseSupport withdrawal design study. *JMIR Form Res* 2022 Dec 14;6(12):e38479 [FREE Full text] [doi: [10.2196/38479](https://doi.org/10.2196/38479)] [Medline: [36515992](https://pubmed.ncbi.nlm.nih.gov/36515992/)]
12. Oser SM, Oser TK. Diabetes technologies: We are all in this together. *Clin Diabetes* 2020 Apr;38(2):188-189 [FREE Full text] [doi: [10.2337/cd19-0046](https://doi.org/10.2337/cd19-0046)] [Medline: [32327892](https://pubmed.ncbi.nlm.nih.gov/32327892/)]

13. Grant RW, Buse JB, Meigs JB, University HealthSystem Consortium (UHC) Diabetes Benchmarking Project Team. Quality of diabetes care in U.S. academic medical centers: low rates of medical regimen change. *Diabetes Care* 2005 Feb;28(2):337-442 [FREE Full text] [doi: [10.2337/diacare.28.2.337](https://doi.org/10.2337/diacare.28.2.337)] [Medline: [15677789](https://pubmed.ncbi.nlm.nih.gov/15677789/)]
14. American Diabetes Association. 7. Diabetes technology: Standards of medical care in diabetes-2021. *Diabetes Care* 2021 Jan;44(Suppl 1):S85-S99. [doi: [10.2337/dc21-S007](https://doi.org/10.2337/dc21-S007)] [Medline: [33298418](https://pubmed.ncbi.nlm.nih.gov/33298418/)]
15. Oser TK, Litchman ML, Allen NA, Kwan BM, Fisher L, Jortberg BT, et al. Personal continuous glucose monitoring use among adults with type 2 diabetes: Clinical efficacy and economic impacts. *Curr Diab Rep* 2021 Dec 09;21(11):49 [FREE Full text] [doi: [10.1007/s11892-021-01408-1](https://doi.org/10.1007/s11892-021-01408-1)] [Medline: [34882273](https://pubmed.ncbi.nlm.nih.gov/34882273/)]
16. Carlson AL, Mullen DM, Bergenstal RM. Clinical use of continuous glucose monitoring in adults with type 2 diabetes. *Diabetes Technol Ther* 2017 May;19(S2):S4-S11 [FREE Full text] [doi: [10.1089/dia.2017.0024](https://doi.org/10.1089/dia.2017.0024)] [Medline: [28541137](https://pubmed.ncbi.nlm.nih.gov/28541137/)]
17. Grunberger G, Sze D, Ermakova A, Sieradzan R, Oliveria T, Miller EM. Treatment intensification with insulin pumps and other technologies in patients with type 2 diabetes: Results of a physician survey in the United States. *Clin Diabetes* 2020 Jan;38(1):47-55 [FREE Full text] [doi: [10.2337/cd19-0008](https://doi.org/10.2337/cd19-0008)] [Medline: [31975751](https://pubmed.ncbi.nlm.nih.gov/31975751/)]
18. Beck RW, Bergenstal RM, Laffel LM, Pickup JC. Advances in technology for management of type 1 diabetes. *Lancet* 2019 Oct 05;394(10205):1265-1273. [doi: [10.1016/S0140-6736\(19\)31142-0](https://doi.org/10.1016/S0140-6736(19)31142-0)] [Medline: [31533908](https://pubmed.ncbi.nlm.nih.gov/31533908/)]
19. Martens TW. Continuous glucose monitoring in primary care - are we there? *Curr Opin Endocrinol Diabetes Obes* 2022 Feb 01;29(1):10-16. [doi: [10.1097/MED.0000000000000689](https://doi.org/10.1097/MED.0000000000000689)] [Medline: [34845158](https://pubmed.ncbi.nlm.nih.gov/34845158/)]
20. Simonson GD, Bergenstal RM, Johnson ML, Davidson JL, Martens TW. Effect of professional CGM (pCGM) on glucose management in type 2 diabetes patients in primary care. *J Diabetes Sci Technol* 2021 May;15(3):539-545 [FREE Full text] [doi: [10.1177/1932296821998724](https://doi.org/10.1177/1932296821998724)] [Medline: [33719598](https://pubmed.ncbi.nlm.nih.gov/33719598/)]
21. American Academy of Family Physicians. AAFP TIPS: Make small changes that yield big results. American Academy of Family Physicians. URL: <https://www.aafp.org/family-physician/practice-and-career/managing-your-practice/aafp-tips.html> [accessed 2023-03-05]
22. Wagner EH, Flinter M, Hsu C, Crompton D, Austin BT, Etz R, et al. Effective team-based primary care: observations from innovative practices. *BMC Fam Pract* 2017 Feb 02;18(1):13 [FREE Full text] [doi: [10.1186/s12875-017-0590-8](https://doi.org/10.1186/s12875-017-0590-8)] [Medline: [28148227](https://pubmed.ncbi.nlm.nih.gov/28148227/)]
23. Sheridan B, Chien AT, Peters AS, Rosenthal MB, Brooks JV, Singer SJ. Team-based primary care: The medical assistant perspective. *Health Care Manage Rev* 2018;43(2):115-125. [doi: [10.1097/HMR.0000000000000136](https://doi.org/10.1097/HMR.0000000000000136)] [Medline: [27849646](https://pubmed.ncbi.nlm.nih.gov/27849646/)]
24. Joshi T, Budhathoki P, Adhikari A, Poudel A, Raut S, Shrestha DB. Team-based learning among health care professionals: A systematic review. *Cureus* 2022 Jan 14;14(1):e21252 [FREE Full text] [doi: [10.7759/cureus.21252](https://doi.org/10.7759/cureus.21252)] [Medline: [35178311](https://pubmed.ncbi.nlm.nih.gov/35178311/)]
25. Ofstad W, Brunner LJ. Team-based learning in pharmacy education. *Am J Pharm Educ* 2013 May 13;77(4):70 [FREE Full text] [doi: [10.5688/ajpe77470](https://doi.org/10.5688/ajpe77470)] [Medline: [23716738](https://pubmed.ncbi.nlm.nih.gov/23716738/)]
26. James S, Cogan P, McCollum M. Team-based learning for immunology courses in allied health programs. *Front Immunol* 2019 Oct 30;10:2477 [FREE Full text] [doi: [10.3389/fimmu.2019.02477](https://doi.org/10.3389/fimmu.2019.02477)] [Medline: [31736944](https://pubmed.ncbi.nlm.nih.gov/31736944/)]
27. Burgess A, van Diggele C, Roberts C, Mellis C. Team-based learning: design, facilitation and participation. *BMC Med Educ* 2020 Dec 03;20(Suppl 2):461 [FREE Full text] [doi: [10.1186/s12909-020-02287-y](https://doi.org/10.1186/s12909-020-02287-y)] [Medline: [33272267](https://pubmed.ncbi.nlm.nih.gov/33272267/)]
28. Burgess A, Roberts C, Ayton T, Mellis C. Implementation of modified team-based learning within a problem based learning medical curriculum: a focus group study. *BMC Med Educ* 2018 Apr 10;18(1):74 [FREE Full text] [doi: [10.1186/s12909-018-1172-8](https://doi.org/10.1186/s12909-018-1172-8)] [Medline: [29631579](https://pubmed.ncbi.nlm.nih.gov/29631579/)]
29. Miles MB, Huberman AM, Saldana J. Designing matrix and network displays. In: *Qualitative Data Analysis: A Methods Sourcebook*, 3rd Edition. Thousand Oaks, CA: Sage Publications, Inc; 2014:107-119.
30. Beebe J. *Rapid Assessment Process: An Introduction*. Lanham, MD: AltaMira Press; 2001.
31. Kompala T, Wong J, Neinstein A. Diabetes specialists value CGM despite challenges in prescribing and data review process. *J Diabetes Sci Technol*. Epub ahead of print 2022 Apr 11 [FREE Full text] [doi: [10.1177/19322968221088267](https://doi.org/10.1177/19322968221088267)] [Medline: [35403469](https://pubmed.ncbi.nlm.nih.gov/35403469/)]
32. Everett EM, Wisk LE. Relationships between socioeconomic status, insurance coverage for diabetes technology and adverse health in patients with Type 1 diabetes. *J Diabetes Sci Technol* 2022 Jul;16(4):825-833 [FREE Full text] [doi: [10.1177/19322968211050649](https://doi.org/10.1177/19322968211050649)] [Medline: [34632819](https://pubmed.ncbi.nlm.nih.gov/34632819/)]
33. McAdam-Marx C. Addressing healthcare disparities and managed care considerations with continuous glucose monitoring. *Am J Manag Care* 2022 Jul;28(4 Suppl):S76-S84 [FREE Full text] [doi: [10.37765/ajmc.2022.89215](https://doi.org/10.37765/ajmc.2022.89215)] [Medline: [36007237](https://pubmed.ncbi.nlm.nih.gov/36007237/)]
34. Sierra JA, Shah M, Gill MS, Flores Z, Chawla H, Kaufman FR, et al. Clinical and economic benefits of professional CGM among people with type 2 diabetes in the United States: analysis of claims and lab data. *J Med Econ* 2018 Mar;21(3):225-230 [FREE Full text] [doi: [10.1080/13696998.2017.1390474](https://doi.org/10.1080/13696998.2017.1390474)] [Medline: [28994334](https://pubmed.ncbi.nlm.nih.gov/28994334/)]
35. Rivera-Ávila DA, Esquivel-Lu AI, Salazar-Lozano CR, Jones K, Doubova SV. The effects of professional continuous glucose monitoring as an adjuvant educational tool for improving glycemic control in patients with type 2 diabetes. *BMC Endocr Disord* 2021 Apr 23;21(1):79 [FREE Full text] [doi: [10.1186/s12902-021-00742-5](https://doi.org/10.1186/s12902-021-00742-5)] [Medline: [33888117](https://pubmed.ncbi.nlm.nih.gov/33888117/)]
36. Longo R, Sperling S. Personal versus professional continuous glucose monitoring: When to use which on whom. *Diabetes Spectr* 2019 Aug;32(3):183-193 [FREE Full text] [doi: [10.2337/ds18-0093](https://doi.org/10.2337/ds18-0093)] [Medline: [31462872](https://pubmed.ncbi.nlm.nih.gov/31462872/)]



37. Zehra A, Brown EA, Wolf RM. Providing point-of-care sample CGM increases uptake of personal CGM. *J Diabetes Sci Technol* 2023 Mar;17(2):598-599. [doi: [10.1177/19322968221137080](https://doi.org/10.1177/19322968221137080)] [Medline: [36350177](https://pubmed.ncbi.nlm.nih.gov/36350177/)]

## Abbreviations

**AAFP:** American Academy of Family Physicians

**AAFP TIPS CGM:** American Academy of Family Physicians TIPS on Continuous Glucose Monitoring

**CGM:** continuous glucose monitoring

**CME:** continuing medical education

*Edited by A Mavragani; submitted 19.12.22; peer-reviewed by B Jortberg, A Nederveld, S Schembre; comments to author 16.02.23; revised version received 09.03.23; accepted 14.03.23; published 24.04.23*

*Please cite as:*

*Filippi MK, Lanigan AM, Oser SM, Alai J, Brooks-Greisen A, Oser TK*

*A Team-Based Training for Continuous Glucose Monitoring in Diabetes Care: Mixed Methods Pilot Implementation Study in Primary Care Practices*

*JMIR Form Res* 2023;7:e45189

URL: <https://formative.jmir.org/2023/1/e45189>

doi: [10.2196/45189](https://doi.org/10.2196/45189)

PMID: [37093632](https://pubmed.ncbi.nlm.nih.gov/37093632/)

©Melissa K Filippi, Angela M Lanigan, Sean M Oser, Jillian Alai, Alicia Brooks-Greisen, Tamara K Oser. Originally published in JMIR Formative Research (<https://formative.jmir.org>), 24.04.2023. This is an open-access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work, first published in JMIR Formative Research, is properly cited. The complete bibliographic information, a link to the original publication on <https://formative.jmir.org>, as well as this copyright and license information must be included.