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THE sensor report

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WELCOME TO

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In this issue of the *Sensor Report* we are shining a spotlight on two areas of diabetes care that are increasingly emphasised. These are care of elderly and frail people with diabetes, and the importance of primary care in successful management of people with diabetes, particularly those with T2DM. According to the International Diabetes Federation (IDF), 537 million people worldwide (in 2021) are living with diabetes, which is predicted to rise to 783 million by 2045.[1] Global diabetes-related health expenditures were estimated at $966 billion USD in 2021, and are projected to reach 1,054 billion USD by 2045.[1]

Since people worldwide are living longer, it is anticipated that there will be a doubling of the aged population within the coming 30 years and reaching more than 2.1 billion individuals above the age of 60 years by year 2050.[2] It is projected that the aging of the world's population will result in an increasing proportion of those living with diabetes being over the age of 60 years over the coming two decades.[1] For example, in the United States, the relative rate of increase in people with a diagnosis of diabetes is greatest for those aged ≥80 years.[3] This population of older people living with diabetes is also more at risk of developing long-term diabetes complications, such as cardiovascular disease, kidney failure, retinopathy and neuropathy compared to younger people living with diabetes.[4] Older adults are also more likely to have cognitive impairment and different levels of frailty that will have an impact on both diabetes education and management.[5]

The use of CGM technology has many benefits specific to the care of older adults with diabetes. Along with the many documented glycemic benefits for people with diabetes,[6,7] use of CGM devices can minimize or eliminate the need for painful finger prick self-monitored blood glucose (SMBG) testing, which for many elderly individuals may be administered by a carer. Some CGM systems also allow family members and carers to have real-time insights into glycemic patterns and trends for an elderly or frail person with diabetes, which is particularly important since this population is at higher risk of hypoglycemia. The magnitude and threshold of the symptomatic and hormonal response to hypoglycemia is also reduced in older people,[8] increasing the risk of severe hypoglycemia of each individual episode. In this issue of the *Sensor Report*, we provide detailed insights into the care of older individuals with diabetes using CGM technology.

As the number of individuals with diabetes increases, the role of primary care teams in managing individuals with T2DM becomes paramount. This will include people with T2DM who are on insulin therapy, who may previously have been managed in specialist clinics. To date, the proportion of CGM use in people with T2DM has been relatively low compared use in T1DM, but CGM uptake by people with T2DM is increasing rapidly, with most growth in primary care, including amongst people treated with basal insulin or on non-insulin therapy.[9,10]

The use of CGM systems can help manage concerns over hypoglycemia, both for people with T2DM treated with basal insulin and their primary care practitioner (PCP). Wearing a CGM sensor provides the user with biofeedback on their glucose levels in real time, along with clear information on whether their glucose levels are falling and how fast, using visible trend arrows. There is significant evidence that compared to self-monitored blood glucose (SMBG) testing, use of CGM by people with T2DM on basal insulin or on non-insulin therapy has benefits for glycemia and beyond. These include reduced HbA1c,[6] reduced total daily dose (TDD) of insulin, weight loss, improvements in treatment satisfaction and self-reported diabetes-related behaviours.[11] In this issue of the *Sensor Report*, we provide an in-depth review of PCP attitudes to managing people with T2DM in the primary care setting, and also discuss the challenges that must be met for effective use of CGM technology in primary care.

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Continuous glucose monitoring in the care of older people living with diabetes

The prevalence of diabetes increases with age, such that 33% of adults aged 65 years or older may be affected by diabetes.[1] Older adults are more likely to have co-existing conditions such as cognitive impairment, cardiovascular disease, renal failure, and different levels of frailty that will have an impact on both diabetes education and management.[2] Even if relatively healthy, older people with diabetes are more at risk of developing long-term microvascular or macrovascular complications of diabetes.[3]

Current clinical practice guidelines do not adequately define older persons living with diabetes. Improved life expectancy, quality of life and level of functioning means that chronological age alone cannot be used to define a person as elderly based on convention, which would commonly mean a person aged 65 years or more. However, differences in genetics, lifestyle and overall health mean that older people with diabetes are a very heterogeneous group with regard to their health status.

The goals of therapy for managing diabetes in older people must take into account the projected life expectancy of the individual, which may be another 30 years for someone aged 65 and only recently diagnosed with diabetes. Conversely, for someone with long duration of diabetes and multiple comorbidities, this may be much shorter. International consensus guidelines[4] suggest more lenient targets for older people, particularly those with comorbid cardiovascular or renal disease. In people with diabetes in older age, the goals of treatment are geared towards preserving QoL and preventing acute complications of diabetes, such as DKA and severe hypoglycemia, which are associated with increased risks for cardiovascular events, dementia and death.[5] In this setting, the avoidance of hypoglycemia has been suggested as a greater priority than minimizing HbA1c.[6]

The application of CGM technologies in old and frail people living with diabetes

To date, there are few studies on the use of CGM in older people living with diabetes. A subgroup analysis of the DIAMOND trial found that adults aged ≥60 years with T1DM or T2DM on intensive insulin therapy, reported high use of CGM with reduced HbA1c (–0.4% [–4.4 mmol/mol]) and reduced glycemic variability compared to blood glucose monitoring.[7] Reductions in moderate-to-severe hypoglycemia with CGM have also been reported for people living with T1DM or T2DM aged ≥65 years,[8,9] associated with improved well-being ($p<0.001$), less fear of hypoglycemia ($p<0.05$), and less diabetes distress ($p<0.05$). Notably, reductions in HbA1c associated with using CGM have been shown to be more-pronounced in the >60 year-old age group compared to younger adults with T2DM.[10]

Looking at CGM metrics, adults aged ≥65 years with T2DM on non-insulin treatment regimens have been shown to significantly improve their time in range (TIR) 70-180mg/dL (3.9-10.0 mmol/L) by +15% after 12 months using CGM devices,[11] and time above range (TAR) >180 mg/dL (>10.0 mmol/L) also reduced by –15%, in line with the improved %TIR after 12 months. The use of geriatric principles for managing people with T1DM, including simplified treatment regimens and setting personalized glycemic goals has also been shown to significantly reduce hypoglycemia risk in adults ≥65 years on intensive insulin therapy, without worsening overall glycemic control.[12]

In the WISDM randomised controlled trial (RCT), the use of CGM by adults with T1DM aged ≥60 years reduced time below range (TBR) <70 mg/dL (3.9 mmol/L) by 48% after 26 weeks, compared to SMBG ($p<0.001$), maintained through 12 months.[13] The REPLACE RCT in people with T2DM on intensive insulin therapy found that a subgroup of study participants ≥65 years old in the CGM intervention group were associated with a 56% reduction in TBR 70 mg/dL (3.9 mmol/L), which was comparable to subjects <65 years old.[14] Data from the MOBILE RCT shows that people with T2DM ≥65 years old on basal insulin therapy were able to improve TIR and reduce hypoglycemia after starting CGM, at least as significantly as younger adults.[15]

The RELIEF retrospective national cohort study in France[16] reported that people with T2DM aged ≥65 years on intensive insulin therapy had 34% and 40% fewer hospitalizations for acute diabetes events (ADEs), in the 12 and 24 months after starting flash glucose monitoring, compared to the 12 months prior to starting. This was driven by a fall in admissions for DKA after 12 months and by fewer admissions for severe hypoglycemia at 24 months.

Together, these data show that older people living with diabetes can use CGM technology and achieve better glycemic control including significant improvements of TIR, reduced TBR and reduced TAR, as well as improvements in QoL. Significantly, older people living with T2DM on intensive insulin therapy have reduced risk of hospital admission for DKA or severe hypoglycemia after starting to use CGM.

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Older adults with T2DM have fewer hospital admissions for acute diabetes events after starting the FreeStyle Libre system*

The study aimed to assess the impact of initiating flash glucose monitoring on hospitalizations for acute diabetes events (ADEs) in individuals aged ≥65 years with T2DM on intensive insulin therapy.

This retrospective study used the French SNDS (Système National des Données de Santé) database to assess the impact of initiating the FSL system on hospitalizations for ADEs in people aged ≥65 with T2DM on intensive insulin therapy (multiple daily injections or insulin pumps). The analysis included 38,312 individuals starting the first-generation FreeStyle Libre system* without alarms between August 1, 2017, and December 31, 2018, with 12 months of data before and up to 24 months after FSL initiation.

Hospitalizations for severe hypoglycemia (SH), diabetic ketoacidosis (DKA), comas, and hyperglycemia were identified using ICD-10 codes. ADE hospitalizations were 1.6% in the 12 months before FSL, compared to 1.05% at 12 months and 0.96% at 24 months, showing a 34% and 40% reduction, respectively. The reduction was mainly driven by fewer DKA admissions after 12 months and fewer SH admissions at 24 months.

These outcomes demonstrate that flash glucose monitoring is associated with reduced hospitalization for ADEs in a vulnerable older population of adults with T2DM and confirm that being older does not limit the use or efficacy of flash glucose monitoring as people with diabetes age.

*Sale of the original FreeStyle Libre system has been discontinued in Belgium and Luxembourg. The FreeStyle Libre 2 systems are for sale, providing the same benefits as the original FreeStyle Libre system, with the added functionalities of optional real-time alarms.

Guerci B, *et al.* Reduced Acute Diabetes Events After FreeStyle Libre System Initiation in People 65 Years or Older with Type 2 Diabetes on Intensive Insulin Therapy in France. *Diabetes Technol Ther.* 2023;25(6): 384–394. doi:10.1089/dia.2023.0034.[https://pubmed.ncbi.nlm.nih.gov/36944104/]

Flash glucose monitoring lowers HbA1c, reduces diabetes distress and improves awareness of hypoglycemia for older adults with T1DM

This retrospective observational study evaluated the impact of initiating the FreeStyle Libre system* on glycemic outcomes, diabetes distress, hypoglycemia awareness, and resource utilization across older adults with T1DM.

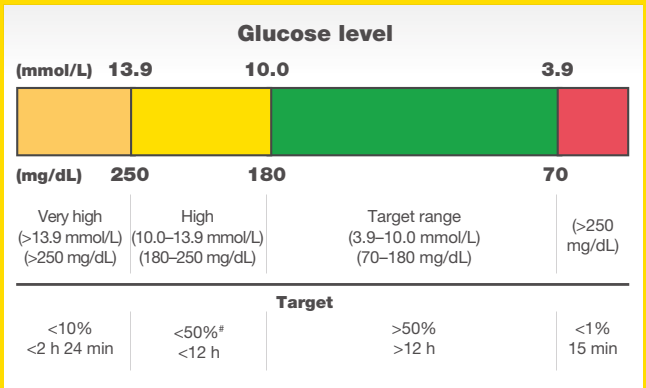
Data from the Association of British Clinical Diabetologists (ABCD) audit on FreeStyle Libre was used to analyze 1,592 older adults with T1DM before and after starting flash glucose monitoring. The study classified them as young-old (65–75 years; n= 171), middle-old (>75–85 years; n=374), and old-old (>85 years; n=47). No significant differences in HbA1c and Diabetes Distress Scale (DDS2) scores were evident at baseline across groups, but Gold scores for impaired awareness of hypoglycemia (IAH) were increased with age (young-old: 3.20; middle-old: 3.46; old-old: 4.05; p<0.0001).

With median FreeStyle Libre system use of 7 months, HbA1c significantly improved in young-old (–0.4% [–3.9 mmol/mol]; p<0.001) and old-old (–0.6% [–6.4 mmol/mol] p=0.03) groups. DDS2 scores improved in all groups (p<0.001), while Gold scores for IAH were reduced in young-old and old-old (p<0.001). Resource utilization improved across all age groups, demonstrating the benefits of flash glucose monitoring in older adults with T1DM.

*Sale of the original FreeStyle Libre system has been discontinued in Belgium and Luxembourg. The FreeStyle Libre 2 systems are for sale, providing the same benefits as the original FreeStyle Libre system, with the added functionalities of optional real-time alarms.

Deshmukh H, *et al.* Clinical features of type 1 diabetes in older adults and the impact of intermittently scanned continuous glucose monitoring: An Association of British Clinical Diabetologists (ABCD) study. *Diabetes Obes Metab* 2024;26(4):1333–1339. doi:10.1111/dom.15434. [https://pubmed.ncbi.nlm.nih.gov/38164758/]

CGM targets for older people with type 1 or type 2 diabetes and those at high-risk from hypoglycemia[1]



- Avoidance of hypoglycemia is prioritized in older people with diabetes, because of their age, duration of insulin therapy or impaired awareness of hypoglycemia.
- Additional risk must be considered in older people with cognitive/physical impairment and comorbidities, e.g., renal disease, joint disease, osteoporosis, fracture risk and CVD.
- Compared to SMBG, use of CGM in older people with diabetes is associated with:
  - Lowered HbA1c
  - Reduced moderate-severe hypoglycemia
  - Less diabetes distress
  - Improved time in range
  - Fewer hospital admissions for acute diabetes events

#Readings >13.9 mmol/L (>250 mg/dL) are also included in the <50% target

IAH, Impaired awareness of hypoglycemia

1. Battelino T, *et al.* Clinical Targets for Continuous Glucose Monitoring Data Interpretation: Recommendations From the International Consensus on Time in Range *Diabetes Care* 2019; 42(8): 1593–1603. [https://pubmed.ncbi.nlm.nih.gov/PMC6973648]

TBR should be prioritized over TIR to safeguard against hypoglycemia in older adults with T1DM

The study aimed to assess the relationships between CGM metrics—TIR, TBR, TAR, and CV—relative to recommended clinical CGM targets for older adults with T1DM.

This post hoc analysis from the JDRF Australia Adult Hybrid Closed Loop trial examined CGM metrics in 120 adults with T1DM. Participants (61 on multiple daily injections, and 59 on non-CGM augmented pumps) had 3 weeks of masked CGM at baseline and 26 weeks.

Baseline correlations showed a strong negative relationship between TIR and TAR ($p<0.0001$) but only a weak correlation with TBR ($p<0.0001$). There was no significant correlation between TIR and glucose variability (GV), whereas TBR and GV were correlated ($p<0.0001$). The findings suggest that TBR should be prioritized for older adults to reduce hypoglycemia risk, independent of TIR. Since changes in TIR were not associated with changes in TBR in this older group, the authors recommend that, for older AID users, TBR should be addressed separately from TIR.

O'Neal DN, *et al.* An Assessment of Clinical Continuous Glucose Monitoring Targets for Older and High-Risk People Living with Type 1 Diabetes. *Diabetes Technol Ther* 2023;25(2):108–115. doi:10.1089/dia.2022.0350. [https://pubmed.ncbi.nlm.nih.gov/36315189/]

Elderly people embrace CGM to improve diabetes self-management

The aim of this mixed-methods observational study was to evaluate the acceptability, usability, compliance, and satisfaction of CGM among elderly people with diabetes.

The study included 30 participants with an average age of 74.79 years. Each participant wore two CGM devices, and their experiences were assessed through surveys and interviews to determine the effectiveness of CGM in diabetes management. The study found that CGM was highly usable and acceptable among elderly people with diabetes, with participants able to use CGM devices effectively to monitor and predict blood glucose trends, which positively impacted their glucose control and lifestyle.

The average adherence rate using CGM was 81%, reflecting substantial self-management and treatment decision-making. The study concluded that CGM educational programs tailored for the elderly, training for healthcare professionals, expanding insurance coverage, and promoting real-time CGM technology are essential for improving usability and acceptance among older adults with diabetes.

Ahn J, *et al.* Advancing elderly diabetes care: exploring the usability and acceptance of continuous glucose monitoring (CGM). *Geriatr Nurs* 2024;59:15–25. doi:10.1016/j.gerinurse.2024.06.041. [https://pubmed.ncbi.nlm.nih.gov/38981204/]

Using CGM with geriatric principles reduces hypoglycemia in adults with T1DM aged 65 years or older and is cost effective

This study examined the impact of application of CGM alongside geriatric principles, such as simplified treatment regimens and setting personalized glycemic goals, on hypoglycemia in older adults with T1DM.

Older adults (≥65 years) with T1DM and hypoglycemia (≥2 episodes of blood glucose <70 mg/dL for ≥20 minutes over 2 weeks) were randomized to the intervention (n=68) or control group (n=63). The intervention group used CGM with personalized treatment goals, while the control group received usual care.

After 6 months, the intervention group showed a significant median reduction from baseline in %TBR <70 mg/dL (<3.9 mmol/L) of –2.6%, compared to –0.3% in the control group ($p< 0.001$). The improvement was noted in both CGM-naïve (–2.8%) and CGM users (–1.2%). This significant reduction in hypoglycemia risk in older adults with T1DM on intensive insulin therapy was achieved without worsening overall glycemic control. The intervention was cost-effective with an incremental cost-effectiveness ratio of $71,623 per quality-adjusted life-year.

Munshi MN, *et al.* Continuous Glucose Monitoring With Geriatric Principles in Older Adults With Type 1 Diabetes and Hypoglycemia: A Randomized Controlled Trial. Diabetes Care 2024; dc241069. Online ahead of print. doi:10.2337/dc24–1069.[https://pubmed.ncbi.nlm.nih.gov/39325586/]

The rise of CGM in adults aged 60 years and older: a shift driven by younger age, higher BMI and insulin pump use

This prospective study identified predictors of CGM use in people with diabetes aged ≥60 years who were on insulin therapy and assessed trends in CGM adoption amongst this group of adults from 2019 to 2021.

This study included 6,849 individuals aged ≥60 years with diabetes using insulin therapy (T1DM: n=1,529; T2DM: n=5,320) from 129 treatment centers, with data retrieved from the German Diabetes Prospective Follow-up Registry (DPV) in March 2023. Sensor use increased from 2019 to 2021 in both type 1 diabetes (28% to 45%) and type 2 diabetes (10% to 18%).

Predictors of CGM adoption in T1DM were younger age and continuous subcutaneous insulin infusion (CSII) use ($p<0.001$). In T2DM, younger age, longer diabetes duration, higher BMI, and CSII use ($p<0.001$) were significant predictors. Despite the growing use of CGM in older adults, physical barriers, usability challenges, lack of interest in technology, and potential age-related biases may influence adoption rates. These findings suggest CGM adoption will continue to rise among older adults with diabetes.

Grammes J, *et al.* Continuous glucose monitoring in older adults with diabetes: Data from the diabetes prospective follow-up (DPV) registry. *Diabet Med* 2024; 41(3):e15261. doi:10.1111/dme.15261. [https://pubmed.ncbi.nlm.nih.gov/38009855/]

Remote education on use of CGM improves glycemic control, including for older adults

This prospective observational study assessed glycemic outcomes and support needed for older versus younger adults with diabetes using CGM technology and evaluated the impact of remote CGM education.

Data were collected from adults with T1DM (n=160) or T2DM (n=74) using basal-bolus insulin injections or insulin pump therapy. Age groups were 20-40 years (n=81), >40-64 years (n=126) and ≥65 years (n=27). Participants received remote CGM education over three scheduled visits with additional visits as needed. Median CGM use was ≥95% across all age groups.

From baseline to 6 months, TIR 70–180 mg/dL (3.9–10.0) improved for all age groups, with the largest improvement observed in the ≥65-year group (+9%, p=0.006). HbA1c reductions were similar across age groups, with no significant differences (p>0.05).

After training, the older age group were able to participate in remote consultations and significantly improve their HbA1c, mean glucose, TIR and TBR comparably with younger adults with diabetes, including those aged <40 years, but training times were increased for older adults, by an extra 41 minutes (p=0.001).

This study highlights that older adults benefit equally from CGM use but require more training time compared to younger adults, emphasizing the need for tailored educational approaches specific to different age groups of CGM users.

Weinstock RS, *et al.* Older Adults Benefit From Virtual Support for Continuous Glucose Monitor Use But Require Longer Visits. *J Diabetes Sci Technol* 2 Nov 2024;doi: 19322968241294250. [https://pubmed.ncbi.nlm.nih.gov/39487727/]

Older adults with diabetes improve glycemic control and reduce hypoglycemia when using CGM

This narrative review aimed to evaluate CGM's impact on glycemic outcomes in older adults with diabetes and proposes individualized glucose targets reflecting their diverse health and functional statuses.

Use of CGM technology improves glycemic outcomes, including increased TIR 70–180 mg/dL (3.9–10.0 mmol/L) and reduced TBR <70 mg/dL (<3.9 mmol/L), among older adults with T1DM. A key concern is that current guidelines, which prioritize hypoglycemia avoidance, may not address the significant heterogeneity in the health and functional status of older adults, particularly that hypoglycemia avoidance may be more strongly related to minimization of glucose variability.

The authors propose updated CGM targets and target ranges for older adults with diabetes: for healthy individuals (no comorbidities that interfere with self-care, intact cognition, no caregiver needs), the target range should be 90–180 mg/dL (5.0–10.0 mmol/L), with a daily target of >70%; for older adults with intermediate health (>5 comorbidities, mild-moderate cognitive impairment, >2 impairments of activities of daily life), the target range should be 100–200 mg/dL (5.6–11.1 mmol/L) with a daily target of >70%; for those in poor health (end-stage chronic disease, moderate-severe cognitive dysfunction, dependent on carers), the target range should be 100–250 mg/dL (5.6–13.9 mmol/) with a daily target of >70%.

For all older adults the recommendation is to avoid TBR <70 mg/dL (<3.9 mmol/L) completely (0% of readings) and to use a hypoglycemia buffer zone of 70–100 mg/dL (3.9–5.6 mmol/L) to mitigate risks, with a target of <4% of readings in this zone. Such tailored CGM targets are needed to optimize outcomes in this older population of people with diabetes.

Toschi E, *et al.* Glucose Targets Using Continuous Glucose Monitoring Metrics in Older Adults With Diabetes: Are We There Yet?. *J Diabetes Sci Technol* 2024;18(4):808–818. doi:10.1177/19322968241247568. [https://pubmed.ncbi.nlm.nih.gov/38715259/]

featurestory

Primary care management of people with T2DM means greater use of CGM technology

The provision of care for people with T2DM and the prevention of related cardiovascular complications are chiefly undertaken in primary care, where up to 90% of adults with T2DM are managed.[1–3] However, approximately 9–10% of people with T2DM have typically been managed in specialist endocrinology clinics because they are on insulin therapy.[4] A key goal is to be able to incorporate the care of this group of adults with T2DM into primary care, without increased costs or burden of care. The application of CGM technology for individuals with T2DM on non-intensive insulin therapy has the potential to significantly enhance their care, and provide primary care teams with the tools to understand day-to-day glycemic health status metrics in greater detail. Increasingly, the use of CGM systems is recommended for the management of people with T2DM on basal insulin therapy.[5]

Attitudes among primary healthcare professionals

A recent survey of primary care professionals (PCPs) in the UK tested attitudes to managing individuals with T2DM on non-intensive insulin therapy and the use of CGM technology to support this.[6] Amongst the surveyed PCPs, providing clinical care for individuals with T2DM treated with insulin was seen as an important training need for primary care teams, with 71.4% of respondents identifying this aspect of care as a high-priority. In the management of people with T2DM on insulin, 94.3% of the PCP respondents agreed or strongly agreed that using CGM supports better decision making in this patient group and 97.1% believed use of CGM could reduce therapeutic inertia in meeting glycemic goals.

From a clinical organizational perspective, the improved opportunities for remote monitoring of this population of people with T2DM were seen as an important benefit of using CGM

(94.3%), providing multiple avenues for objective engagement with patients. There was also clear agreement (88.6%) that CGM technology provides an opportunity for increased use of the diabetes digital ecosystem to improve clinical workflows in primary care, but this was balanced by caution amongst 65.7% of respondents that making changes to clinical workflows to incorporate CGM technology was a potential barrier. Other perceived barriers to managing people with T2DM on insulin using CGM included lack of experience in using and interpreting CGM in T2DM (82.9%), resistance to change amongst primary care teams (71.4%), providing education for people with T2DM starting on CGM (65.7%) and lack of standardized platforms for using CGM technology in alignment with established primary care systems (57.1%).

Aligned with the outcomes and attitudes discussed above, other primary care concerns are centred on the need to improve training in initiating injectable insulin therapy and how to provide practical demonstrations and patient education, and how to identify and address concerns.[7] The use of digital tools developed for use of CGM are associated with improved decision making in primary and secondary care management of individuals with T2DM,[8] and the role of nurse practitioners in leveraging telehealth solutions in primary care has been noted.[9]

Ultimately, using CGM technology is expected to become the standard of care for people with T2DM on non-intensive insulin therapy in primary care. However, a number of barriers need to be overcome (see box), such that primary care teams can effectively manage people with T2DM and optimize the value of CGM technology.

Key needs for effective management of people with T2DM on insulin using CGM in primary care

1. Comprehensive training programs should be implemented for primary care teams that focus on the use and interpretation of CGM data, alongside insulin initiation and management.
2. The treatment benefits and cost-effectiveness of CGM for individuals with T2DM on basal or premixed insulin must be differentiated from the non-insulin treated T2DM population to ensure targeted use of CGM.
3. Health services should be proactive in the development and deployment of patient management systems that effectively integrate CGM data into Electronic Health Records.
4. Primary care teams must be enabled to utilize CGM technology to support timely treatment intensification and reduce therapeutic inertia by providing actionable insights into patients' glycemic patterns. This will improve glycemic control and reduce diabetes-related complications for people with T2DM on insulin therapy.

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3. Oser TK, *et al.* Continuous Glucose Monitoring in Primary Care: Understanding and Supporting Clinicians' Use to Enhance Diabetes Care. *Ann Fam Medicine* 2022; 20(6):541–547. [https://pmc.ncbi.nlm.nih.gov/articles/PMC9705045/]

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5. American Diabetes Association. 7. Diabetes Technology: Standards of Care in Diabetes - 2025. *Diabetes Care* 2025;48(Suppl. 1):S146-S166. [https://pubmed.ncbi.nlm.nih.gov/39651978]

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Tell us what you think!

The team at the *Sensor Report* is always keen to hear your feedback and suggestions.

Please share your feedback through this short feedback questionnaire with us.

researchupdates

Past prescribing of CGM is linked to higher confidence in managing people with T1DM or T2DM among nurse practitioners

This cross-sectional web-based survey, using a survey developed specifically to the study, evaluated behaviors and attitudes among nurse practitioners (NPs) toward the use of CGM in people with T1DM or T2DM.

In this study, descriptive statistics were used to summarize CGM experience, while multivariable regression identified characteristics predicting CGM prescribing and confidence in its use. NPs in hospital settings were twice as likely to prescribe CGM (Odds Ratio [OR]=2.32; p=0.002) compared to those in private practice. In contrast, NPs in academic medical centers were less likely to prescribe CGM (OR=0.10; p=0.002).

Past prescribing was associated with favorability toward future prescribing and increased confidence in using CGM for managing T1DM (coef.=3.57; p<.001) and T2DM (coef.=3.49; p<0.001) as well as a higher likelihood of future prescribing (coef.=0.73; p<0.001). Key support resources included consultations with endocrinologists (62%), educational websites (61%), and e-consultations (59%).

Hall TL, *et al.* Continuous glucose monitoring among nurse practitioners in primary care: Characteristics associated with prescribing and resources needed to support use. *J Am Assoc Nurse Pract.* 2024; Online ahead of print. Doi: 10.1097/JXX.0000000000001060. [https://pubmed.ncbi.nlm.nih.gov/39046421/]

Listen to Professor Sam Seidu's podcast on *The use of CGM in optimizing type 2 diabetes management with non-intensive insulin treatment in the primary care setting*

In this podcast Professor Seidu highlights the considerable potential of using CGM in people with T2DM to transform their diabetes care. It encourages people living with T2DM and healthcare providers to consider CGM technology as an integral part of treatment plans, ultimately improving daily living with T2DM.

[https://link.springer.com/article/10.1007/s13300-023-01524-z]

Use of CGM in primary care - precise control, fewer risks, seamless integration and less clinical guessing for people with diabetes

This narrative review examines the needs for CGM technology to be adopted in the primary care setting, including improved access, leveraging electronic medical records (EMRs) and equipping providers with training and support.

Adults with diabetes managed in primary care were assessed for the impact of CGM compared to self-monitored blood glucose (SMBG) testing. The study showed significant benefits of CGM, including improved time in range (TIR) and reduced hypoglycemia, meeting international clinical targets for CGM.

Integrating CGM data into EMRs supported the use of ambulatory glucose profile (AGP) reports, enabling faster glycemic pattern recognition and enhancing shared decision-making. Cost analysis indicated that CGM use in primary care improved outcomes, reducing emergency visits and long-term complications. Important barriers still to be overcome include: limited expertise, workflow inefficiencies and inadequate access to CGM technology.

The findings support CGM adoption in primary care, particularly when combined with team-based care and education for primary care providers.

Martens TW. Roadmap to the Effective Use of Continuous Glucose Monitoring in Primary Care. *Diabetes Spectr* 2023;36(4):306–314. doi:10.2337/dsi23–0001. [https://pubmed.ncbi.nlm.nih.gov/37982066/]

Use of CGM enhances glycemic control across all therapeutic regimens but is best delivered via a multidisciplinary approach

This podcast discussed key CGM updates from the ADA 2024 conference, focusing on CGM implementation in primary care, equity, and its impact on diabetes management and outcomes.

This commentary delivered as part of the American Diabetes Association 2024 Scientific Sessions on CGM, emphasized the need to improve equity in access to CGM systems and to develop the role of interdisciplinary teams in primary care to leverage the opportunities provided by application of CGM. Notable findings include the benefits of CGM for reducing hospitalizations, enhancing time in range (TIR), and decreasing HbA1c in diverse populations, including those with T2DM.

Real-world data shows that CGM use significantly improves glycemic control across all therapeutic regimens in the treatment of people with diabetes. This underscores the importance of integrating Diabetes Care and Education Specialists (DCES) into primary care delivery of care. Ultimately, the transformative potential of using CGM technology in primary care management of people with diabetes can most readily be met when implemented through a multidisciplinary approach.

Wright EE Jr. Techniques for Implementing Continuous Glucose Monitoring in Primary Care: Key CGM Updates and Highlights from the ADA 2024 Conference [Podcast]. *Diabetes Metab Syndr Obes* 2024; 17:3477–3480. doi:10.2147/DMSO.S491645. [https://pubmed.ncbi.nlm.nih.gov/39309306/]

A roadmap of using CGM in primary care[1]



The opportunities and challenges to primary care use of CGM technology in the care of people with T2DM

Impact of using CGM in Primary Care

- Compared to SMBG testing, use of CGM technology in primary care **can reduce HbA1c by up to 2.4% (26 mmol/L)** over 6 months for adults with T2DM.[2,3]
- **Hypoglycemia affects around 1 in 5 people** with T2DM not treated with insulin.[3]
- Use of CGM can **reduce hospital admissions for people with T2DM** on basal insulin or on insulin secretagogue therapies.[4,5]
- Use of **CGM helps people with T2DM to improve their self-management needs**, understand their glycemic changes and how their treatment works.[6]
- Using CGM can **improve clinical contact with individuals with T2DM distant from primary care services**.[7]



Primary Care

Challenges in use of CGM in primary care

- **Comprehensive training for primary care teams** that focus on the use and interpretation of CGM data, alongside insulin initiation and management.[8]
- Proactive development and deployment of **patient management systems that effectively integrate CGM data** into Electronic Health Records.[8]
- Primary care teams must be **enabled to use CGM technology to support timely treatment intensification** and reduce therapeutic inertia.[7,8]
- Healthcare services must be aware that use of CGM technology in people with T2DM not on intensive insulin therapy is **demonstrated to be cost-effective**.[9]

CGM, continuous glucose monitoring; HER, electronic health record

1. Martens TW. Roadmap to the Effective Use of Continuous Glucose Monitoring in Primary Care. *Diabetes Spectr.* 2023 Fall; 36(4): 306–314. [https://pmc.ncbi.nlm.nih.gov/articles/PMC10654126/]

2. Grace TP, *et al.* The Dexcom Community Glucose Monitoring Project: 6-Month Results Using Continuous Glucose Monitoring in Type 2 Diabetes. *Clin. Diabetes : A Publ. Am. Diabetes Assoc.* 2024; 42: 540–546. [https://pubmed.ncbi.nlm.nih.gov/39429458/]

3. Hannah K, *et al.* Risk of hypoglycaemia among people with type 2 diabetes not treated with insulin: A retrospective analysis of Medicare Advantage beneficiaries. *Diabetes, Obes. Metab.* 2025; 27: 54–60. [https://pubmed.ncbi.nlm.nih.gov/39344852/]

4. Riveline J-P, *et al.* Reduced Rate of Hospitalizations for Acute Diabetes Events Before and After FreeStyle Libre® System Initiation in Some People With Type 2 Diabetes on Insulin-Secretagogue Oral Drug Therapy Without Insulin in France. *Diabetes Technol. Ther.* 2024; 26:932–938. [https://pubmed.ncbi.nlm.nih.gov/38885325/]

5. Guerci B, *et al.* Important Decrease in Hospitalizations for Acute Diabetes Events Following FreeStyle Libre System Initiation in People with Type 2 Diabetes on Basal Insulin Therapy in France. *Diabetes Technol. Ther.* 2023; 25: 20–30. [https://pubmed.ncbi.nlm.nih.gov/36094418/]

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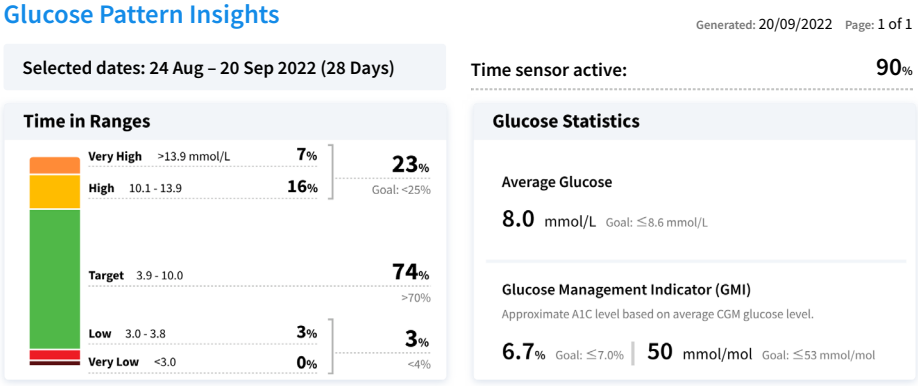
8. Seidu S, *et al.* Removing barriers to management of adults with type 2 diabetes on insulin using continuous glucose monitoring in UK primary care practice: An expert consensus. *Diabet. Med.* 2024; e15500 doi:10.1111/dme.15500. [https://pubmed.ncbi.nlm.nih.gov/39676327/]

9. Del Prato S, *et al.* Cost–utility analysis of a flash continuous glucose monitoring system in the management of people with type 2 diabetes mellitus on basal insulin therapy—An Italian healthcare system perspective. *Diabetes, Obes. Metab.* 2024; 26: 3633–3641. [https://pubmed.ncbi.nlm.nih.gov/38853717/]

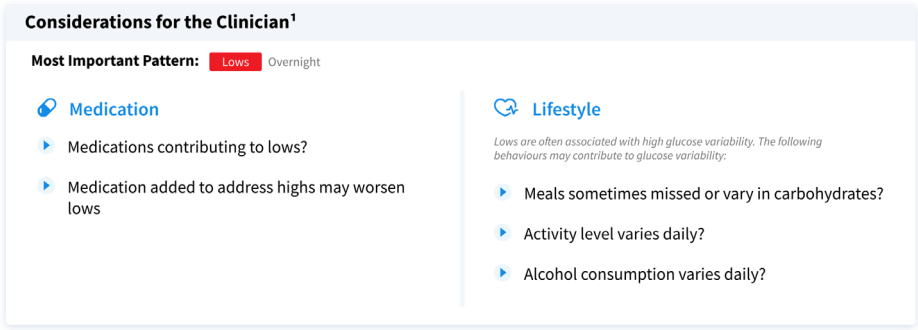
Understanding and interpreting the glucose patterns insight (GPI) report

The GPI report is an enhanced description of the data found in an ambulatory glucose profile (AGP) and provides a guided interpretation of the user's sensor data. It covers the full 24-hour picture of daily diabetes management for FreeStyle Libre systems users and is accessible from the secure#, cloud-based LibreView platform.* Using the GPI report enables the HCP to make targeted therapy decisions and start/support meaningful lifestyle discussions.



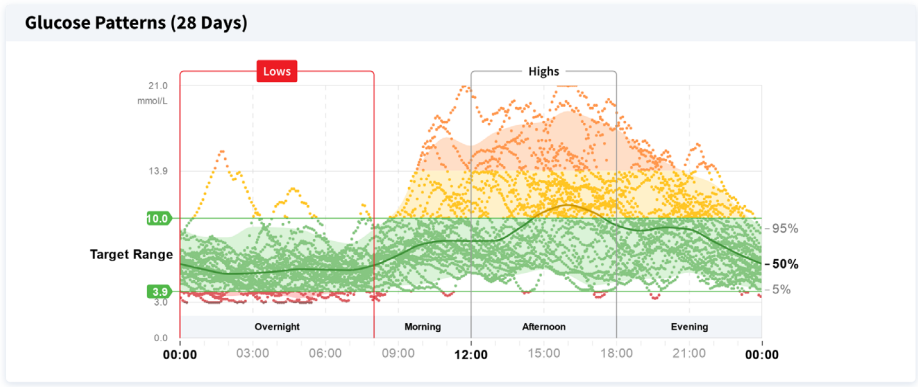
Time In Ranges and Glucose Statistics

Shows the user's **overall glucose metrics** and how they compare to current **International Consensus targets** for Time in Range, Time Below Range and Time Above Range.



Clinical considerations

LibreView software provides **medication and lifestyle considerations** to guide treatment decisions, based on the most important patterns and trends.



Glucose patterns

The software identifies the user's **glycemic patterns and highlights the most important pattern** during the reporting period. The timeline of the reports can be changed to cover from 7-days to 12 weeks of CGM data. Based on what and when the glucose pattern shows, a decision can be made on what action is needed.

Device(s): FreeStyle Libre 3 +

1. Suggested considerations do not replace the opinion or advice of the healthcare provider.

* The LibreView website is only compatible with certain operating systems and browsers. Please check www.libreview.com for additional information.

LibreView is ISO27001/27018/27701 certified and HITRUST CSF Certified.

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