

THE sensor report

ISSUE 1/2025

WELCOME TO THE SENSOR REPORT, ISSUE 1, 2025

In this first issue of the *Sensor Report* for 2025, we are able to report on some groundbreaking research that takes continuous glucose monitoring (CGM) forward to the next level of diabetes care. To date, randomized controlled trials (RCTs) and real-world evidence have shown that the FreeStyle Libre systems are a safe and effective component of daily diabetes self-management for people with either T1DM or T2DM. This includes reducing long term glycemia, as measured by glycated hemoglobin, reducing the frequency and impact of hypoglycemia and limiting hospital admissions due to acute diabetes events (ADEs) such as severe hypoglycemia or diabetic ketoacidosis (DKA). Now, we are able to highlight important new research showing that using the FreeStyle Libre systems are associated with significant reductions in the occurrence and impact of long-term cardiometabolic complications of diabetes.

Until now, clear evidence for the change in risk of long-term complications for people with diabetes who achieve good glycemic control was drawn from two landmark studies, the Diabetes Control and Complications Trial (DCCT) in T1DM^{1,2} and the United Kingdom Prospective Diabetes Study (UKPDS) in T2DM.³ These showed that individuals able to maintain lower levels of HbA1c had reduced risks for microvascular complications, such as retinopathy, kidney disease or neuropathy, as well as reduced long-term risks for cardiovascular disease and death. Studies linking the use of CGM to occurrence of diabetes complications have been limited, showing that increased time in range (TIR) is consistently associated with fewer macro- and microvascular complications in T1DM^{4,5} or T2DM.^{5,6} However, such studies have been conducted on small numbers of individuals and over a short follow-up period.

The two studies reported in our feature story involve large numbers of adults with either T1DM (n=11,822)⁷ or T2DM (n=5,168)⁸ and show outcomes for reduced hospitalizations for long-term complications of diabetes

are associated with using the FreeStyle Libre systems over a 2-year follow up period. These benefits will lessen the burden of living with diabetes for people with T1DM or T2DM and their carers, as well as lowering the cost-impact of diabetes complications for healthcare services. These outcomes also provide the final piece of the jigsaw for the value of using glucose sensing technology in all individuals with T1DM or T2DM, showing efficacy for improved glycemic control and reduced impact of hypoglycemia,^{9,10} lower risk of hospital admissions for ADEs^{11,12} and for long-term microvascular and macrovascular disease.^{7,8}

Also in this issue of the *Sensor Report* we summarize the highlights from the 60th annual meeting of the European Association for the Study of Diabetes (EASD), September 9-13, 2024 in Madrid. These include the correlation between time in tight range (TITR) 70-140 mg/dL (3.9-7.8 mmol/L) and the risk of microvascular and macrovascular complications of diabetes, as well as several real-world studies that report on the association of using the FreeStyle Libre systems in T1DM or T2DM with reduced risk of ADEs requiring hospital admission in several healthcare regions.

Given the association between using the FreeStyle Libre systems with reduced cardiovascular complications of diabetes, in this issue of the *Sensor Report* we also highlight the evidence that using implantable cardioverter defibrillators and the FreeStyle Libre system together does not lead to any interference in functionality of either device.

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12. Riveline JP, et al. Reduced Rate of Acute Diabetes Events with Flash Glucose Monitoring Is Sustained for 2 Years After Initiation: Extended Outcomes from the RELIEF Study. *Diabetes Technol Ther* 2022;24(9): 611-618 [<https://pubmed.ncbi.nlm.nih.gov/35604792/>].

Initiating the FreeStyle Libre system is associated with significant reductions in hospitalizations for diabetes-related complications

Two large-scale studies from Sweden have shown for the first time that the FreeStyle Libre system not only enhances glycemic control but also significantly lowers risks of hospitalization for severe long-term complications of diabetes, such as heart disease, kidney failure and stroke.

These pivotal studies using the Swedish National Diabetes Register (NDR) have demonstrated the efficacy of flash glucose monitoring, using the FreeStyle Libre system, for improved long-term clinical outcomes for individuals living with T1DM or T2DM.

Key outcomes in type 1 diabetes

In the first study¹, 11,822 adults with T1DM using the FreeStyle Libre system, were compared to 3,007 matched controls using finger prick blood glucose monitoring (BGM). Data from the NDR and the Swedish National Patient Register (NPR) were used to track hospitalization rates and changes in HbA1c. The results were striking. Individuals with T1DM using FreeStyle Libre system experienced significantly lower relative risks of hospitalization for acute diabetes events (ADEs) and

for long-term cardiometabolic complications of T1DM compared to those relying on BGM.

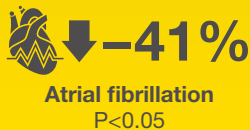
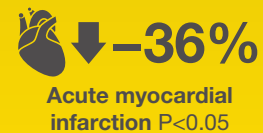
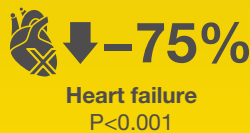
Hypoglycemia-related admissions decreased by 68%, while diabetic ketoacidosis (DKA) admissions fell by 45%. Furthermore, FreeStyle Libre system use was associated with a 52% reduction in stroke-related hospitalizations and a 36% reduction in admissions for acute myocardial infarction. Admissions for atrial fibrillation and heart failure also saw significant reductions, of 41% and 75%, respectively. Hospitalizations for peripheral vascular disease and kidney disease were similarly reduced.

Overall, adults with T1DM using the FreeStyle Libre system had a 68% lower risk of hospitalization for any reason compared to BGM users. Importantly, FreeStyle Libre system use also resulted in improved glycemic control compared to BGM use, with reductions in mean HbA1c of 0.30% (3.3 mmol/mol) at 6 months and 0.24% (2.6 mmol/mol) at 24 months (p<0.001). These findings highlight the broad impact of FreeStyle Libre system in improving glycemic control, reducing ADEs and cardiovascular events in T1DM.

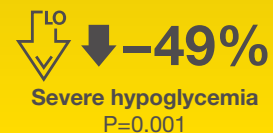
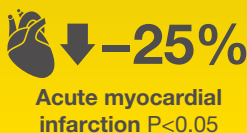
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REFLECT Study Outcomes: Using the FreeStyle Libre system significantly reduces hospital admissions for ADEs and micro- and macrovascular complications

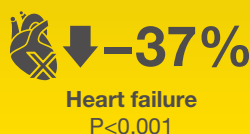
T1DM¹



T2DM-MDI²



T2DM-Basal²



Key outcomes in type 2 diabetes

The second study focused on adults with insulin-treated T2DM, comprising subgroups on multiple daily insulin injections (T2D-MDI) or on basal insulin (T2D-B).² A total of 2,876 individuals in the T2D-MDI subgroup and 2,292 in the T2D-B subgroup, using the FreeStyle Libre system, were compared with 33,584 and 43,424 matched BGM controls, respectively.

In the T2D-MDI cohort, initiating the FreeStyle Libre system was associated with a 49% reduction in hospital admissions for severe hypoglycemia, while hospital admissions for stroke were reduced by 46%, and acute non-fatal myocardial infarctions by 25%. The overall risk of hospitalization for any reason fell by 16%. In the T2D-B group, heart failure admissions were reduced by 37% and the overall risk of hospitalization for any reason fell by 24%.

The glycemic control benefits seen in adults with T2DM mirrored those in T1DM. In the T2D-MDI group, adults using the FreeStyle Libre system experienced a mean reduction in HbA1c of 0.34% (3.7 mmol/mol) at 6 months, which was sustained at 24 months. The T2D-B group showed a similar HbA1c reduction of 0.32% (3.5 mmol/mol) at 6 months, also sustained at 24 months. These reductions in HbA1c are clinically meaningful and indicate that FreeStyle Libre system offers consistent and sustained glycemic improvements.

Implications for diabetes care

Together, these studies highlight a significant milestone in the management of diabetes. The use of the FreeStyle Libre system represents a paradigm shift in the long-term management of diabetes. The reduction in hospitalization rates for critical complications indicates that the FreeStyle Libre system can play a vital role in proactive diabetes care, potentially alleviating the burden on healthcare systems.

The findings from Sweden cover all FreeStyle Libre users with diabetes and indicate that the system is not merely an adjunct to diabetes care but a transformative tool that can significantly enhance patient safety, improve glycemic control, and reduce the likelihood of severe complications. As healthcare continues to evolve, the integration of advanced monitoring systems like the FreeStyle Libre system is essential for optimizing diabetes management and improving the quality of life for millions of patients worldwide.

1. Eeg-Olofsson K, *et al.* Initiation of Intermittently Scanned Continuous Glucose Monitoring Is Associated With Reduced Hospitalization for Acute Diabetes Events and Cardiovascular Complications in Adults With Type 1 Diabetes. *Diabetes Care* 2024; Sep 24;dc240690. doi: 10.2337/dc24-0690 [<https://pubmed.ncbi.nlm.nih.gov/39316385/>]

2. Nathanson D, *et al.* Intermittently scanned continuous glucose monitoring compared with blood glucose monitoring is associated with lower HbA1c and a reduced risk of hospitalisation for diabetes-related complications in adults with type 2 diabetes on insulin therapies. *Diabetologia* 2024;1-11; doi: 10.1007/s00125-024-06289-z. [<https://pubmed.ncbi.nlm.nih.gov/39460755/>]

researchupdates

Using CGM systems is associated with reduced hospitalizations and improved health for people with T1DM or T2DM

Continuous glucose monitoring (CGM) has transformed diabetes management by offering more personalized and accurate glucose data, leading to better glycemic control and reduced complications. A series of recent retrospective studies¹⁻³ confirm that use of CGM technology is associated both with improved glycemic management and with reduced hospital attendance for acute diabetes events (ADEs), both for people with T1DM or T2DM.

The first study used the Optum de-identified Market Clarity database of >79 million people to assess how use of CGM devices in people with T2DM impacted hospital admissions and emergency room (ER) attendance for acute diabetes events (ADEs).¹ The analysis covered 74,679 adults with T2DM treated with non-insulin therapy, basal insulin therapy or prandial insulins. ADEs included hypoglycemia, hyperglycemia, diabetic ketoacidosis (DKA), hyperosmolarity and coma. Primary outcomes included changes in all-cause hospitalizations, diabetes-related hospitalizations, and ER visits during the 6 and 12-month periods after initiating CGM.

Significant reductions were seen in all-cause hospitalizations, ADE-related hospital admissions and ER visits, at 6 months and sustained at 12 months. ADE-related hospitalizations were reduced for people with T2DM on noninsulin treatment (-31.0%), on basal insulin therapy (-47.6%) or on prandial insulin therapy (-52.7%) ($p < 0.001$ in each case). ER visits for ADEs were also reduced for people with T2DM on noninsulin treatment (-30.7%), on basal insulin therapy (-28.2%) or on prandial insulin therapy (-36.6%) ($p < 0.001$ in each case).

ADE-related emergency room visits and hospitalizations were reduced over 12 months for people with T2DM using CGM:¹

Treatment group	ER visits	Hospitalizations
Non-insulin therapy	-31%	-31%
Basal insulin therapy	-28%	-48%
Prandial insulin therapy	-37%	-53%

These significant reductions in healthcare resource utilization further bolster the proposition for using CGM devices in T2DM, including for individuals not treated with insulin.

A retrospective study in the Veterans Affairs (VA) health care system examined the outcomes of initiating CGM in 5,015 individuals with adult-onset T1DM, compared to 3,518 matched individuals with T1DM not using CGM, and for 15,706 adults with T2DM on insulin therapy following initiation of CGM, compared to 29,912 matched controls.² Compared to non-users, after initiating CGM persons with T1DM achieved a mean -0.26% (-2.9 mmol/mol) reduction in HbA1c after 12 months ($p < 0.001$), with significantly more CGM users reducing their HbA1c to $< 8.0\%$ (< 64 mmol/mol; $p, 0.05$) or $< 9.0\%$ (< 75 mmol/mol; $p < 0.001$). Adults with T2DM saw a -0.35% (-3.9 mmol/mol) reduction in mean HbA1c after starting CGM compared to non-users ($p < 0.001$), again with significantly more CGM users achieving HbA1c levels $< 8.0\%$ (< 64 mmol/mol) or $< 9.0\%$ (< 75 mmol/mol).

Risk of hospital emergency room (ER) visits and hospital admissions for hypoglycemia were reduced by -31% for adults with T1DM in the 12 months after starting CGM, compared to non-users ($p = 0.04$). Adults with T2DM experienced -13% fewer ER visits and admissions for acute hyperglycemia in the 12 months following initiation

of CGM compared to non-users ($p = 0.04$). All-cause hospitalizations were also reduced for adults with T1DM or T2DM in the 12 months after initiating CGM (by -25% [$p = 0.002$] and -11% [$p = 0.004$] respectively).

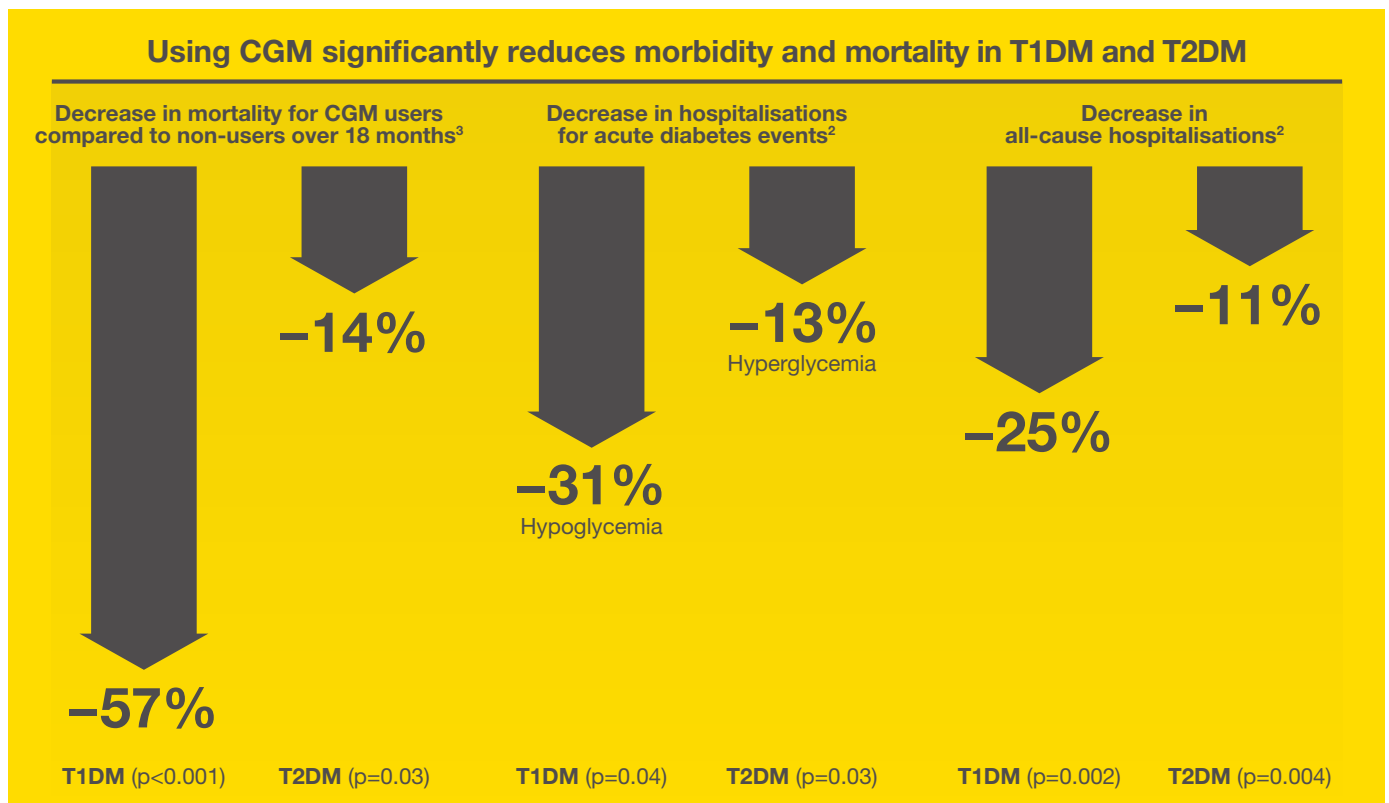
Further supporting the benefits of CGM, a follow-up analysis of the cohort of VA cohort³ found that CGM usage was associated with significant reductions in mortality for individuals with T1DM or T2DM treated with insulin. Users with T1DM saw a 57% reduction in mortality risk, while users with T2DM experienced a 14% reduction over 18 months. CGM also led to a decline in serious cardiovascular events and all-cause hospitalizations, highlighting its broad health benefits beyond glucose control.

These three studies underscore the comprehensive benefits of CGM devices for individuals with T1DM or T2DM, including for those with T2DM on non-insulin, and support their broader adoption in diabetes management strategies.

1. Garg SK, et al. Impact of continuous glucose monitoring on hospitalizations and glucose control in people with type 2 diabetes: real-world analysis. *Diabetes Obes Metab*. 2024. Doi:10.1111/dom.15866 [<https://pubmed.ncbi.nlm.nih.gov/39263872/>]

2. Reaven PD, et al. Initiation of Continuous Glucose Monitoring is Linked to Improved Glycemic Control and Fewer Clinical Events in Type 1 and Type 2 Diabetes in the Veterans Health Administration. *Diabetes Care*. 2023;46(4):854-863 [<https://pubmed.ncbi.nlm.nih.gov/36807492/>]

3. Reaven P, et al. Initiating Continuous Glucose Monitoring (CGM) in Adult-Onset Type 1 Diabetes and Type 2 Diabetes (T1D; T2D) Reduces Mortality. (ATTD) 2024. Oral Abstract Presentation 0077#660



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.

Using implantable cardioverter defibrillators and the FreeStyle Libre system does not lead to any interference in functionality of either device

The study aimed to evaluate the impact of wireless interference from implantable cardioverter defibrillators (ICDs) on the accuracy and functionality of FreeStyle Libre systems in individuals with diabetes, particularly in those with advanced heart disease.

As more individuals with diabetes use both CGM and ICDs, this study evaluated the potential impact of various wireless interference sources, including Wi-Fi, Bluetooth, cellular mobile devices, and implantable medical devices on the functionality of the FreeStyle Libre system. Testing was performed under multiple configurations of three different ICD devices, including emergency shock, pacing,

anti-tachycardia pacing (ATP), and DC Fibber modes, resulting in 27 test cases.

The rigorous testing showed no interference or disruption of FreeStyle Libre system functionality during ICD operation. Additionally, ICD sensing leads exhibited no signs of interference, and programmed settings remained unchanged post-testing. These findings confirm that the FreeStyle Libre system and ICD devices can coexist safely, ensuring accurate data transfer and effective wireless communication during clinical use.

Lazar D, et al. Accuracy and Functionality of Select Continuous Glucose Monitoring Systems Are Not Impacted by Implantable Cardioverter Defibrillator Devices. *J Diabetes Sci Technol*. 2024. doi:10.1177/19322968241260038 [<https://pubmed.ncbi.nlm.nih.gov/38907649/>]

Initiation of the Freestyle Libre systems is associated with greater reductions in HbA1c for adults with T2DM on basal-bolus insulin regimens and higher HbA1c at baseline

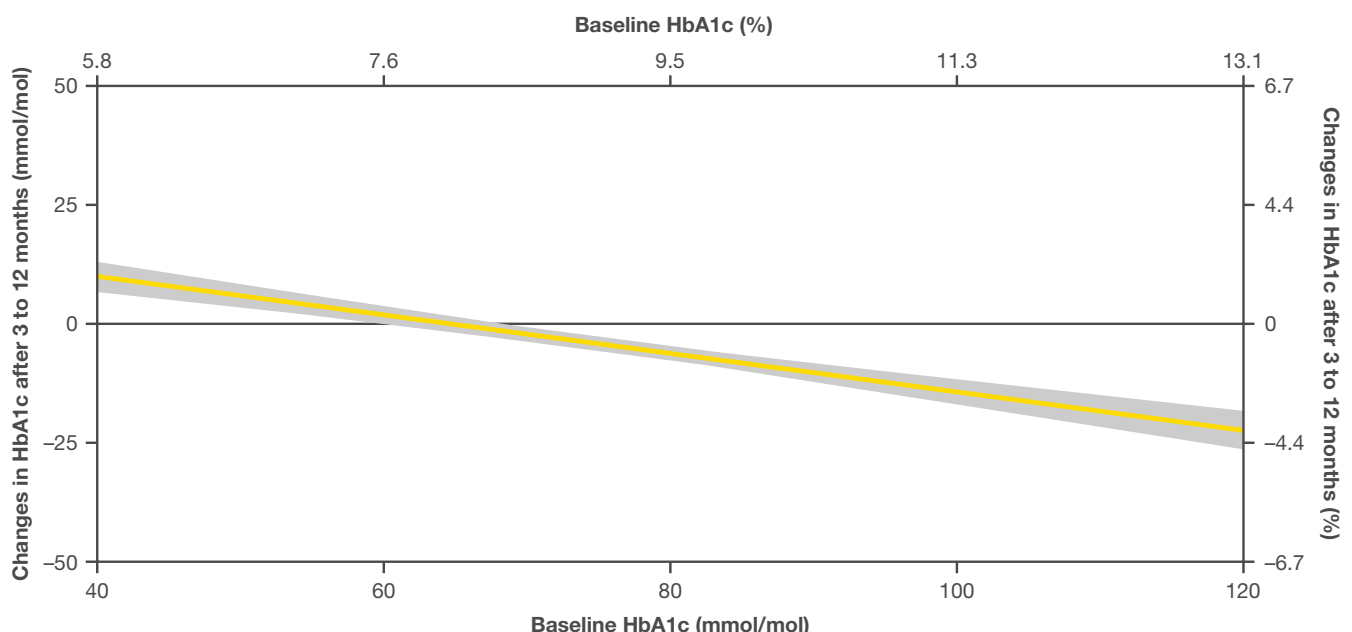
In this observational study, 304 adults with T2DM established on multiple daily insulin injections (MDI) for >12 months had their HbA1c in the 12 months before starting to use the FreeStyle Libre systems compared to the 12-36 months after initiation.

Across the study cohort, a significant -0.18% (-2 mmol/mol) reduction in median HbA1c was noted in the 12 months after starting to use the FreeStyle Libre systems ($p < 0.001$), which was sustained after 3 years of follow-up ($p = 0.038$). Reductions in HbA1c were greatest among adults with T2DM and higher HbA1c levels at baseline. For individuals with HbA1c >9.0% (>75 mmol/mol) prior to starting the FreeStyle Libre systems, HbA1c was reduced by

a median 1.0% (-11 mmol/mol) after 12 months, by -1.3% (-14 mmol/mol) after 24 months and by -1.4% (-15 mmol/mol) after 36 months ($p < 0.001$ in each case).

These outcomes indicate that adults with T2DM and the highest HbA1c at baseline have the greatest clinically relevant reductions in HbA1c after starting to use the FreeStyle Libre systems. That these reductions are maintained over a 3-year period shows that this is not simply regression to the mean in individuals with high baseline HbA1c. Moreover, these reductions are consistent with the degree of change in HbA1c observed in adults with T1DM after starting to use the FreeStyle Libre systems.²

Change in HbA1c in adults with T2DM on MDI after starting to use the FreeStyle Libre system



1. Dover AR, et al. Change in glycated haemoglobin in adults with type 2 diabetes on basal-bolus insulin regimens following commencement of FreeStyle Libre use. *Diabetes Obes Metab*. 2024 Oct 10. doi: 10.1111/dom.16003 [<https://pubmed.ncbi.nlm.nih.gov/39387171/>]

2. Tyndall V, et al. Marked improvement in HbA1c following commencement of flash glucose monitoring in people with type 1 diabetes. *Diabetologia* 2019;62:1349-1356 [<https://pubmed.ncbi.nlm.nih.gov/31177314/>]

Clinical and economic burden of DKA among persons with T2DM remains significantly high

This systematic review evaluated the clinical, economic, and humanistic burden of diabetic ketoacidosis (DKA) in individuals with T2DM, particularly concerning sodium-glucose cotransporter 2 (SGLT2) inhibitors and associated risk factors.

An analysis of 197 publications centered on DKA in individuals with T2DM published between January 2014, and December 2023 from MEDLINE, Embase, and the Cochrane Library, alongside abstracts from the ADA, EASD, and ATTD conferences from 2021 to 2023. DKA incidence varied from 0.4 to 63 per 1000 person-years,

with higher rates in adults with T2DM using SGLT2-inhibitors (0.6 to 6.4 per 1000) and insulin users (0.5 to 3.5 per 1000).

DKA mortality reached up to 62% in COVID-19 cases, with infections as the primary precipitating factor. DKA-related hospital stays averaged between 2.2 and 15.4 days.

The review underscores the significant burden of DKA on healthcare systems and the necessity for preventive measures in high-risk groups, including those on SGLT2-inhibitors or on insulin.

Wysham C, *et al.* Burden of diabetic ketoacidosis among people living with type 2 diabetes: a systematic review. EASD 60th Annual Meeting 2024. Oral Presentation #1002

Insights from the HYPOAGE study suggest that TAR, rather than TBR, is associated with 1-year survival in elderly individuals with diabetes

This prospective multicenter study (HYPOAGE) aimed to determine the frequency and predictors of hyperglycemia in older adults with T2DM on insulin therapy using CGM, along with the impact of time spent in hyperglycemia or hypoglycemia on 1-year mortality.

The study included 146 insulin-treated older adults (age ≥ 75 years) with T2DM using CGM. Participants wore the FreeStyle Libre Pro sensor* for 28 days and underwent geriatric and diabetic assessments. Multivariable logistic regressions identified factors linked to time above range (TAR) with glucose >250 mg/dL (>13.9 mmol/L) $>10\%$ and Kaplan-Meier methods estimated 1-year mortality.

Results showed 30% of patients exceeded the stated TAR target of $<10\%$; with predictors being older age (83.5 vs. 80.6 years), higher HbA1c (8.6% vs. 7.6%), and lower BMI (28.0 vs. 31.3 kg/m²). Increased TAR was associated with higher HbA1c (OR: 3.08 per 1% increase) and lower BMI (OR: 0.92). Ultimately, TAR >250 mg/dL (>13.9 mmol/L) $>10\%$ was linked to reduced 1-year survival (HR: 0.30), while time below range (TBR) $>1\%$ had no significant impact on mortality.

*FreeStyle Libre Pro, not available for sale in EU & UK as 26 May 2024.

Gourdy P, *et al.* Time above range and not time below range is associated with mortality in older patients with type 2 diabetes: results from the HYPOAGE study. EASD 60th Annual Meeting 2024. Abstract #192

FreeStyle Libre system is associated with lower HbA1c and reduced hospitalizations amongst older individuals with T2DM on basal insulin

This large real-world retrospective cohort study investigated changes in HbA1c and healthcare resource utilization before and after the initiation of the FreeStyle Libre systems in adults aged ≥ 66 years with T2DM on basal insulin, with or without glucagon-like peptide-1 receptor agonists (GLP-1 RA).

This before-and-after study analyzed 12,480 patients aged ≥ 66 with T2DM from the Institute for Clinical Evaluative Sciences (IC/ES) database in Ontario, Canada, who began using the FreeStyle Libre systems between September 2019 and April 2021. All patients were on basal insulin, and 17.1% (n=2,129) were also receiving GLP-1 RA therapy.

HbA1c levels, emergency room (ER) visits, and hospitalizations (all-cause, DKA, hypoglycemia) were measured 12 months before starting the FreeStyle Libre systems and during the 24 months after. After starting the FreeStyle Libre systems, HbA1c significantly decreased in both treatment groups ($p < 0.0001$), with a larger reduction in the basal insulin plus GLP-1 RA group vs. basal insulin only group (-0.64% vs. -0.47%).

Visits to the ER for DKA or hypoglycemia were numerically lower in both groups after starting FreeStyle Libre systems, with significant reductions seen in the group treated with basal insulin only (-60% [$p=0.0013$] and -36% [$p < 0.001$], respectively). Similarly, hospital admissions for DKA or hypoglycemia were numerically lower in both groups, with significant reductions seen in the group treated with basal insulin only (-57% [$p=0.0004$] and -30% [$p < 0.001$], respectively).

Harris SB, *et al.* Freestyle Libre use in Ontario among patients with type 2 diabetes in the IC/ES database - evidence from real-world practice: patients aged ≥ 66 years on basal insulin \pm GLP-1 RA. EASD 60th Annual Meeting 2024. Abstract #811

FreeStyle Libre 2 system provides benefits for people with T2DM even when given minimal instruction

This pilot study aimed to investigate the insights gained by people with T2DM regarding how lifestyle factors influence sensor glucose levels within a two-week period of starting the FreeStyle Libre 2 system with minimal guidance.

Between August and November 2023, 340 adults with T2DM not treated with insulin were provided with FreeStyle Libre 2 system devices for up to two weeks. They received minimal instructions and assistance with the application installation, and they completed baseline questionnaires. At the end of the two-week period users were surveyed on their FreeStyle Libre 2 usage and the insights they gained.

75% of participants wore the sensor consistently and 13% discontinued due to sensor detachment. 75% of participants scanned their glucose levels more than six times daily and 80% reported the system to be highly useful and informative. Users with a diabetes duration of less than 5 years reported greater insights gained into how glucose levels were influenced by food items (88% vs 78%), portion sizes (80% vs 60%), and physical activity (65% vs 55%) compared to users with a diabetes duration of more than 5 years. Remarkably, three out of four participants reported behavioral changes following the two-week FreeStyle Libre 2 system usage.

This study shows that even brief FreeStyle Libre 2 system usage, coupled with minimal instruction, provides tangible benefits for adults with T2DM not using insulin, including insights into how lifestyle choices impact blood glucose levels.

Thybo T, et al. Insights from two weeks of isCGM usage among individuals with non-insulin treated type 2 diabetes. EASD 60th Annual Meeting 2024. Short Oral Presentation #869

CGM users significantly outperform non-users in achieving HbA1c targets of 7.0% (53 mmol/mol)

This observational study examined the association between CGM use and HbA1c levels in people with T2DM, regardless of insulin therapy.

Researchers collected data from Electronic Health Records (EHR) at three US centers involved in the T1D Exchange Type 2 Diabetes Quality Improvement Collaborative, including adults with T2DM (aged ≥ 19 years) with at least one clinic visit between 2021 and 2023, with documented active CGM use, and recorded HbA1c values.

In the propensity-matched cohort and univariate analyses of 5,374 CGM users compared to 5,374 matched non-users, mean HbA1c levels significantly improved after CGM across all age groups. Overall, CGM users showed a 33% increase in adjusted odds of achieving the target HbA1c level of 7.0% (53 mmol/mol) compared to non-CGM users at 12 months post-initiation. The proportion of CGM users with HbA1c $< 7.0\%$ (53 mmol/mol) increased by 16% (from 24% to 40%), while non-CGM users saw a 7% increase (from 29% to 36%) in achieving the HbA1c target.

Ebeokozien O, et al. Association of CGM Use with Glycemic Outcomes for People with Type 2 Diabetes: A Multi-Center Observational Longitudinal Study. EASD 60th Annual Meeting 2024. Oral Presentation #813

CGM is effective for people with T2DM on different non-insulin treatments and may have additional benefits for distinct treatment regimens

This study aimed to evaluate whether CGM is associated with lower HbA1c when used with specific classes of anti-diabetes medications in people with T2DM not on insulin therapy.

Deidentified data from the Optum Clinformatics US healthcare claims database was analyzed for a total of 52,394 adults with T2DM, 4,086 of whom were CGM users. Individuals with T2DM who initiated a CGM between 1st January 2019 through December 2022 were included, all aged ≥ 30 years with HbA1c $\geq 8.0\%$.

Overall, use of CGM was associated with an adjusted HbA1c change of -0.26% to -0.27% in all treatment scenarios ($p < 0.0001$). Notably, initiation of CGM was more effective for individuals treated with glucagon-like peptide-1 receptor agonists (GLP-1 RA), sulfonylureas, or dipeptidyl peptidase 4 (DPP-4) inhibitors (additional reductions in HbA1c of -0.13% to -0.26%; $p < 0.05$). The findings suggest that, for people with T2DM not using insulin, CGM use is associated with improvement in HbA1c independent of antihyperglycemic medication use, although there may be additional benefits of using CGM when used in combination with GLP-1 RA, sulfonylureas or DPP-4 inhibitors.

Nemlekar P, et al. The combined effect of CGM with anti-diabetes medications and the association with improved HbA in people with type 2 diabetes not on insulin 1c in people with type 2 diabetes not on insulin. EASD 60th Annual Meeting 2024. Short Oral Presentation #803

Time In tight range (T1TR) emerges as a key metric for predicting diabetes complications in T1DM

This cross-sectional analysis evaluated the association between time in tight range (T1TR) 70-140 mg/dL (3.9-7.8 mmol/L) and chronic diabetes complications in adults with T1DM.

The study included 808 adults with T1DM and used binary logistic regression to adjust for HbA1c and other confounding factors. Participants had a mean age of 44.8 years, a mean T1DM duration of 23.1 years, and a mean T1TR of 33.9%. Among this group, 46% had microvascular complications (34.5% with diabetic retinopathy [DR], 23.8% with diabetic nephropathy [DN], 16% with diabetic peripheral neuropathy [DPN]), and 16.3% had macrovascular complications.

Analysis showed that each 10% increase in T1TR reduced the odds of microvascular complications by 24% (OR 0.76, 95% CI [0.68-0.86], $p < 0.001$), including reduced DR by 24.3%, DN by 20.1% and DPN by 16.3%. Similarly, risk for cerebrovascular accidents were by reduced by 34.9% with each 10% increase on T1TR. These associations remained significant even after adjusting for HbA1c, reinforcing T1TR's relevance as a glycemic control measure.

De Meulemeester J, et al. The Relationship between Time in Tight Range and the Presence of Chronic Complications in Adults with Type 1 Diabetes: A Retrospective Cross-Sectional Real-World Study. EASD 60th Annual Meeting 2024. Oral Presentation #188

FreeStyle Libre system in partnership with automated insulin delivery technologies¹

The FreeStyle Libre 3 sensors are paired with mylife CamAPS FX and creates with mylife YpsoPump the mylife Loop AID system

Abbott is partnered with Ypsomed and CamDiab to implement an AID system based on real-time glucose readings from the FreeStyle Libre 3 and Libre 3 Plus sensors.² The mylife Loop was the first AID system authorized to work with Abbott's FreeStyle Libre 3 sensors, the world's smallest, thinnest* sensor and the most accurate 14-day/15-day CGM systems.**

The AID system connects the FreeStyle Libre 3 sensors with the CamAPS FX app and the mylife YpsoPump, using the algorithm developed by Dr Roman Hovorka's research team at the University of Cambridge in the UK. Once the FreeStyle Libre 3 sensor or Libre 3 Plus sensor is started, the mylife CamAPS FX app will connect via Bluetooth to both the FreeStyle Libre 3 sensor or Libre 3 Plus sensor and the mylife YpsoPump to automatically control insulin delivery.

The combination of the FreeStyle Libre 3 sensor or Libre 3 Plus sensor, the mylife CamAPS FX app and the mylife YpsoPump insulin has the potential to greatly simplify diabetes management for the person living with type 1 diabetes. Glucose data collected by the FreeStyle Libre 3 sensors and insulin dosing information is automatically streamed from the mylife CamAPS FX app every 15 minutes to Glooko, a diabetes data platform, when WiFi or a mobile signal is available. Data can also be uploaded to the mylife Cloud.³



The FreeStyle Libre 2 Plus CGM sensor pairs with the Omnipod[®] 5 Automated Insulin Delivery System

A partnership between Abbott and Insulet allows the FreeStyle Libre 2 Plus sensor to work with the Omnipod[®] 5 Automated Insulin Delivery System.⁴ The app on the Omnipod[®] 5 Controller is designed to start and pair the FreeStyle Libre 2 Plus sensor through a near-field communication (NFC) scan to establish the connection between the Omnipod 5 Pod and the FreeStyle Libre 2 Plus sensor. The Pod receives glucose readings from the FreeStyle Libre 2 Plus sensor to automatically adjust insulin in Automated Mode every 5 minutes.

Omnipod 5[®] is the only tubeless, waterproof⁵, automated insulin delivery system that works with the FreeStyle Libre 2 Plus sensor. SmartAdjust[™] technology proactively predicts glucose values 60 minutes into the future to correct highs and to help to protect against lows, day and night.^{5§} "Through this partnership, Abbott and Insulet offer an integrated digital health platform that is simple and accurate and will provide a best-in-class user experience" said Jared Watkin.

Together, these innovations are a key part of Abbott's key focus on simplifying diabetes management. According to the International Diabetes Federation (IDF), 537 million people worldwide are living with diabetes, which is predicted to rise to 783 million by 2045. Global diabetes-related health expenditures were estimated at \$966 billion USD in 2021, and are projected to reach 1,054 billion USD by 2045.⁵

*Among patient-applied sensors. **Data on File, Abbott Diabetes Care, Inc. ¹For use of FreeStyle Libre 3 sensors with the mylife Loop, refer to the labeling provided with the mylife CamAPS FX app. ²The Pod has a waterproof IP28 rating for up to 25 feet for 60 minutes. The PDM is not waterproof. ³SmartAdjust[™] technology uses a customisable Target Glucose between 6.1-8.3mmol/L (110-150mg/dL) adjustable in 0.6 mmol/L (10mg/dL) increments.

Omnipod is a registered trademark of Insulet Corporation and used with permission. mylife and YpsoPump are registered trademarks of Ypsomed AG. CamAPS is a registered trademark of CamDiab Ltd. Other trademarks are the property of their respective owners.

1. <https://www.abbott.com/corpnewsroom/strategy-and-strength/the-partnerships-changing-how-you-manage-diabetes.html>

2. <https://www.abbott.co.uk/media-center/news/Key-Diabetes-Players-Abbott-Ypsomed-and-CamDiab-Join-Forces-in-the-UK-to-offer-Hybrid-Closed-Loop-System-with-More-Affordable-Sensor-Technology.html>

3. <https://abbott.mediaroom.com/2024-08-07-Abbott-Enters-Global-Partnership-to-Connect-Its-World-Leading-Continuous-Glucose-Monitoring-System-with-Medtronic-Insulin-Delivery-Devices>

4. <https://abbott.mediaroom.com/2020-02-19-Abbott-and-Insulet-Partner-to-Integrate-Next-Generation-Glucose-Sensing-and-Automated-Insulin-Delivery-Technologies-for-Seamless-Diabetes-Care>

5. Sun H, et al. IDF Diabetes Atlas: Global, regional and country-level diabetes prevalence estimates for 2021 and projections for 2045. *Diabetes Res Clin Pract.* 2022; 183:109119. doi: 10.1016/j.diabres.2021.109119 [<https://pubmed.ncbi.nlm.nih.gov/34879977/>]

Abbott to develop CGM designed to work exclusively with Medtronic Devices

Abbott has announced a global partnership with Medtronic to collaborate on an integrated continuous glucose monitoring (CGM) system based on Abbott's most advanced, world-leading FreeStyle Libre technology that will connect with Medtronic's automated insulin delivery (AID) and smart insulin pen systems.³ The integration of Abbott's FreeStyle Libre CGM sensor with Medtronic's AID algorithms will enable automatic adjustments of insulin to keep glucose in range. The CGM sensor, developed by Abbott and designed to work exclusively with Medtronic devices, will be sold by Medtronic, "This partnership pairs two global leaders in glucose sensing technology and insulin delivery," said Jared Watkin, recently retired executive vice president of Abbott Diabetes Care business. "Libre technology has set the standard for accurate, accessible, easy-to-use and reliable continuous glucose monitoring. Connecting this CGM built for Medtronic's insulin delivery systems and algorithms makes it easier for people to spend less time thinking about their diabetes and more time living."⁴

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