MILLIMAN REPORT

Use of continuous glucose monitoring systems in people living with diabetes on non-insulin therapies

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Introduction

Abbott recently engaged Milliman to review and summarize publicly available information surrounding the use of continuous glucose monitoring (CGM) in patients with type 2 diabetes who do not use insulin.

Executive summary

This report examines the utility and impact of prescription CGM in individuals living with type 2 diabetes who are not managed with insulin. Given that type 2 diabetes represents the majority of diabetes cases in the United States and is managed through lifestyle modifications, insulin, and non-insulin medications, the CGM technology presents an additional disease management tool for this population.

Key findings of the report include:

- **Prevalence and management challenges:** Type 2 diabetes accounts for over 90% of diabetes cases, yet routine blood glucose monitoring (BGM) in non-insulin users is often not followed and less rigorous. Traditional methods—such as self-monitoring via finger-prick tests—offer only point-in-time data, limiting the insight into glycemic trends.
- **Evolution of CGM technology:** While CGM was initially designed for type 1 diabetes patients who depend on real-time data for insulin dosing, advancements in CGM technology (including real-time and intermittently scanned options) now offer a broader range of applications. Notably, CGMs are now becoming standard of care for non-insulin-dependent individuals given the increasing body of evidence hence, improving accessibility.
- **Literature-supported benefits:** An emerging body of evidence indicates that CGMs can support improved glycemic control in people living with type 2 not using insulin. Studies have documented reductions in hemoglobin A1C (A1C) levels, especially in patients with higher baseline values, improvements in other CGM metrics, along with declines in hospitalizations and emergency room (ER) visits related to diabetes complications. Furthermore, patient-reported outcomes have been positive, with many individuals noting improvements in medication adherence, ease of use, and informed nutritional choices.
- **Economic considerations and quality of life:** Although cost and technological literacy remain considerations, early economic evaluations demonstrate promising cost-effectiveness. Models and retrospective analyses point to lower per-patient medical expenditures—driven particularly by fewer inpatient admissions—contributing to the potential for cost offsets associated with the use of CGMs, even in non-insulin-using patients.
- **Call for broader coverage and further research:** Available literature and recent updates to diabetes treatment guidelines support the clinical and economic benefits of CGM use in type 2 diabetes patients not on insulin. Additional studies and findings from real-world data may help further reinforce long-term benefits and real-world economic impacts and could optimize patient selection and support expanded payer coverage.

This report synthesizes clinical, economic, and quality-of-life outcomes from peer-reviewed studies to provide a comprehensive assessment that reinforces the potential utility of CGMs in improving the management of type 2 diabetes beyond the insulin-dependent population.

Diabetes background

DIABETES OVERVIEW

Diabetes is a prevalent chronic condition that significantly impacts the health landscape in the United States. As of 2021, approximately 11.3% of the entire U.S. population, or about 37.3 million people, were living with diabetes.[1] Among these, roughly 2 million individuals have type 1 diabetes, an autoimmune condition where insulin-producing beta cells in the pancreas are destroyed, necessitating insulin treatment. The remaining 90% to 95% of people living with diabetes have type 2 diabetes, a metabolic disorder that arises when the body no longer produces enough insulin or develops resistance to it.[2,3,4] Approximately 7.4 million people with diabetes in the U.S. use insulin. Further, 20% of African Americans, 14% of Caucasians, and 17% of Hispanics with diabetes use insulin with or without other oral medications.[5] Other types of diabetes, including gestational or diabetes due to other causes (drug or chemical induced), are out of the scope of this paper.

The management of type 1 and type 2 diabetes differs significantly due to their distinct pathophysiological mechanisms. Type 1 diabetes, typically diagnosed at a young age, requires lifelong insulin therapy since the body no longer produces insulin, a hormone essential for survival, which mobilizes glucose from the bloodstream into the cells for energy. While management of type 1 diabetes involves receipt of daily insulin, type 2 diabetes management focuses on lifestyle modifications and non-insulin medications, although insulin may also be required as a management strategy as the disease progresses. Lifestyle changes, such as improved diet, increased physical activity, smoking cessation, and psychosocial support, are crucial for managing type 2 diabetes and can even potentially reverse the disease's course.

For those with either type of diabetes, the main objective is to maintain blood glucose levels within the normal range (euglycemia); to avoid or prevent high glucose (hyperglycemia), which may lead to long-term damage to blood vessels, organs, and various systems in the body; and to avoid or prevent low glucose (hypoglycemia), which can be life-threatening and require immediate medical attention. Hypoglycemia, along with other factors, may be triggered by insulin and/or other glucose-lowering medications. Achieving this balance involves a combination of lifestyle changes and medications. A variety of medications are available for type 2 diabetes, including but not limited to metformin, sodium-glucose co-transporter 2 (SGLT-2) inhibitors, glucagon-like peptide-1 (GLP-1) receptor agonists, dipeptidyl peptidase-4 (DPP-4) inhibitors, and insulin, each working through different mechanisms to lower and control blood sugar levels.

In addition to glycemic control, treatment of diabetes focuses on prevention of macrovascular (heart attack, stroke, peripheral arterial disease, etc.) and microvascular (retinopathy, neuropathy, and nephropathy) complications. People with diabetes have twice the risk of heart disease of those without diabetes.[6] Landmark clinical trials from the 1990s demonstrated that more intensive (lower) glycemic targets were associated with a reduction in the development of

[1] Sacks, D. B., Arnold, M., Bakris, G. L., Bruns, D. E., Horvath, A. R., Lernmark, Å., Metzger, B. E., et al. (2023). Guidelines and recommendations for laboratory analysis in the diagnosis and management of diabetes mellitus. *Diabetes Care*, *46*(10), e151-e199. https://doi.org/10.2337/dci23-0036

[2] American Diabetes Association. (November 2, 2023). Statistics about diabetes. Retrieved July 22, 2025, from https://diabetes.org/about-diabetes/statistics/about-diabetes?form=MG0AV3.

[3] National Institute of Diabetes and Digestive and Kidney Diseases. (January 2024). Estimated prevalence of diabetes in the United States. National Institutes of Health. Retrieved July 22, 2025, from https://www.niddk.nih.gov/health-information/health-statistics/diabetes-statistics#:~:text=Estimated%20prevalence%20of%20diabetes%20in,ages%2018%20years%20or%20older.

[4] Centers for Disease Control and Prevention. (May 14, 2024). Methods for the National Diabetes Statistics Report. U.S. Department of Health and Human Services. Retrieved July 22, 2025, from https://www.cdc.gov/diabetes/php/data-research/methods.html?CDC_AAref_Val=https://www.cdc.gov/diabetes/data/statistics-report/index.html.

[5] Cefalu, W. T., Dawes, D. E., Gavlak, G., Goldman, D., Herman, W. H., Van Nuys, K., Powers, A. C., et al. (2018). Insulin access and affordability working group: Conclusions and recommendations. *Diabetes Care*, *41*(6), 1299-1311. https://doi.org/10.2337/dci18-0019

[6] Kalyani, R. R., Everett, B. M., Perreault, L., & Michos, E. D. (2023). Heart disease and diabetes. *Diabetes in America [Internet]*. National Institute of Diabetes and Digestive and Kidney Diseases. Retrieved July 22, 2025, from https://www.ncbi.nlm.nih.gov/books/NBK597416/.

microvascular complications.[7] However, pharmacological treatments for type 2 diabetes have changed since then, and current standard of care targets are less intensive. In 2008, the U.S. Food and Drug Administration (FDA) provided guidance[8] to industry for clinical trial development focusing on cardiovascular safety of newer diabetes treatments (DPP-4s, SGLT-2s, and GLP-1s). Since then, clinical trials have demonstrated cardiovascular safety and an association with reduced cardiovascular outcomes and preservation of kidney function.[9]

A1C testing has long been used diagnostically to monitor control of blood sugar levels and to guide treatment decisions.[10] As the standard measure for diabetes control and severity, it is an average glucose level over the previous two to three months, by providing the average glucose bound to hemoglobin over the lifespan of a red blood cell, about 120 days. Regardless of the presence of diabetes, blood glucose levels normally rise in response to eating and then fall back to normal glucose levels. Because it is a long-term average, A1C does not measure this normal variability, hyperglycemia, or hypoglycemia.[11] Certain medications and conditions, such as erythropoiesis-stimulating agents, recent blood transfusion, end-stage renal disease, or pregnancy, can affect A1C accuracy. The American Diabetes Association (ADA) advises that most individuals with diabetes should target an A1C level below 7%, while the National Committee for Quality Assurance (NCQA) recommends a goal of less than 8%. Diabetes self-management education and support (DSMES) programs, which are evidence-based and accredited, are crucial in enhancing health outcomes. These programs equip individuals with the skills, knowledge, and confidence to effectively manage their diabetes, leading to better A1C levels, improved quality of life, and reduced healthcare costs resulting from avoided adverse events and hospital visits.[12]

SELF-MANAGEMENT OF GLUCOSE

In addition to a healthy lifestyle and medications, an important self-management tool for people with diabetes is frequent measurement of glucose levels. Glucose monitoring is a cornerstone to measuring how well glycemic management tools (e.g., medications, lifestyle changes, etc.) are working and may guide medication changes. Because blood glucose levels fluctuate throughout the day due to various factors (e.g., diet, exercise, sleep, illness, etc.), patients with type 1 diabetes must carefully monitor their blood glucose levels and adjust their insulin doses accordingly to maintain glycemic control. For this reason, regular (i.e., multiple times per day) BGM has always been a crucial component in the management of type 1 diabetes. If type 2 diabetes progresses, and the need for insulin arises, regular BGM is required and typically done prior to insulin dosing. In those who do not utilize insulin, however, frequent monitoring of blood glucose is less common, and diabetes disease progression is generally monitored as an A1C measure.

In BGM, glucose levels may be obtained via a fingerstick, which measures capillary blood. Glucose also may be measured via a CGM sensor, placed and worn on the skin, which measures interstitial fluid, just under the skin.[13]

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[7] Pozzilli, P., Strollo, R., & Bonora, E. (2024). One size does not fit all glycemic targets for type 2 diabetes. *Journal of Diabetes Investigation*, *5*(2), 134-141. https://doi.org/10.1111/jdi.12206

[8] Guidance for Industry on Diabetes Mellitus-Evaluating Cardiovascular Risk in New Antidiabetic Therapies to Treat Type 2 Diabetes; Availability, 73 F.R. 77724. Retrieved July 22, 2025, from https://www.federalregister.gov/documents/2008/12/19/E8-30086/guidance-for-industry-on-diabetes-mellitus-evaluating-cardiovascular-risk-in-new-antidiabetic.

[9] Cefalu, W. T., Kaul, S., Gerstein, H. C., Holman, R. R., Zinman, B., Skyler, J. S., Green, J. B., et al. (2018). Cardiovascular outcomes trials in type 2 diabetes: Where do we go from here? Reflections from a *Diabetes Care* Editors' Expert Forum. *Diabetes Care*, *41*(1), 14-31. https://doi.org/10.2337/dci17-0057

[10] Consensus Committee. (2007). Consensus statement on the worldwide standardization of the hemoglobin A1C measurement: The American Diabetes Association, European Association for the Study of Diabetes, International Federation of Clinical Chemistry and Laboratory Medicine, and the International Diabetes Federation. *Diabetes Care*, *30*(9), 2399-2400. https://doi.org/10.2337/dc07-9925

[11] Jancev, M., Vissers, T. A. C. M., Visseren, F. L. J., van Bon, A. C., Serné, E. H., DeVries, J. H., de Valk, H. W., et al. (2024). Continuous glucose monitoring in adults with type 2 diabetes: A systematic review and meta-analysis. *Diabetologia*, 67, 798–810. https://doi.org/10.1007/s00125-024-06107-6

[12] Powers, M. A., Bardsley, J., Cypress, M., Duker, P., Funnell, M. M., Hess Fischl, A., Maryniuk, M. D., et al. (2015). Diabetes self-management education and support in type 2 diabetes: A joint position statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics. *Diabetes Care*, *38*(7), 1372-1382. https://doi.org/10.2337/dc15-0730

[13] Martin, C. T., Criego, A. B., Carlson, A. L., & Bergenstal, R. M. (2019). Advanced technology in the management of diabetes: Which comes first—continuous glucose monitor or insulin pump? *Current Diabetes Reports*, *19*(50). https://doi.org/10.1007/s11892-019-1177-7

Prior to the broader use of CGMs, self-monitoring of blood glucose (SMBG) was the mainstay for glucose monitoring. It is performed by collecting a small drop of blood on a test strip, which is then inserted into a glucometer, providing a single glucose level at that point in time, which can only be done while the patient is awake. The blood collection step is typically done with a finger prick, but alternate collection sites may exist.[14] Currently, patients may need to do BGM multiple times a day to check glucose levels, which show certain points in time, while patients with CGMs must wear the sensor continuously to gain comprehensive glucose data. Both BGM and CGM methods require certain sets of monitoring equipment, but they differ in their data collection capabilities, site of testing, accuracy, variances in accuracy, and reliability. More CGM details are provided in the next section. CGMs have emerged as a more convenient, less invasive option for measuring glucose level patterns, beyond the collection of a single level at a given point in time. The ADA recommends access to BGMs in people who use CGMs, as BGMs may be necessary when CGM readings and alarms do not match symptoms or expectations.[15] While CGM has been recommended for years in individuals who use insulin, the 2025 ADA guidelines newly recommended that CGMs be considered for those with type 2 diabetes not on insulin.[15]

CGM background

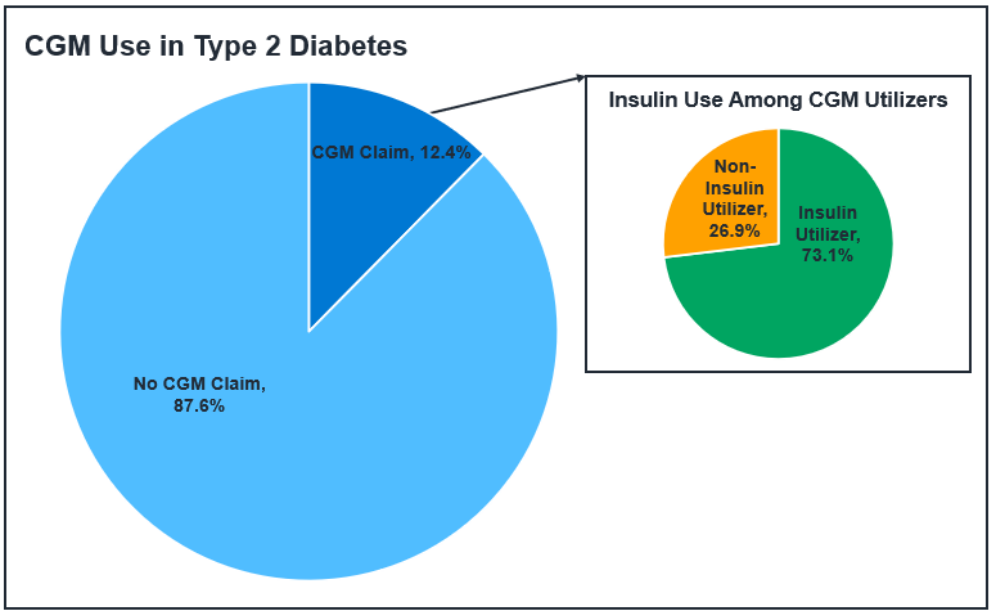
REAL-WORLD CGM USE

Despite the changes to guidelines and additional glucose monitoring metrics provided by CGMs, CGM use in those with type 2 diabetes, particularly non-insulin utilizers, has had less uptake. Using 2023 commercial claims data from Milliman's Consolidated Health Cost Guidelines™ Sources Database (CHSD), we identified the percentage of CGM utilizers with type 2 diabetes with and without concomitant insulin use. We identified 1.5 million individuals with type 2 diabetes (defined as those with at least two separate medical claims with a type 2 diabetes diagnosis code and at least one claim for a diabetes medication). CGM utilizers were identified by the presence of either a pharmacy or medical benefit CGM claim. Our findings are shown in Figure 1. Of note, of those with type 2 diabetes, 12% had a claim for a CGM, and of these, most (73%) also used insulin (despite the fact that only 22% of all type 2 diabetics studied used insulin). On the other hand, we found 71% of those with type 1 diabetes had a claim for CGM, with 98% of them using insulin. This analysis reveals CGM use is less common among patients with type 2 diabetes, particularly among those who do not utilize insulin. The cause for lower utilization among less intensively treated patients is hypothesized to be due to 1) commercial coverage policies generally leaning on Medicare coverage policies and 2) clinical guideline recommendations for non-insulin users with history of hypoglycemia were added more recently compared to insulin users with type 1 or type 2 diabetes.

FIGURE 1: ANALYSIS OF CGM USE IN TYPE 2 DIABETES

[14] Fineberg, S. E., Bergenstal, R. M., Bernstein, R. M., Laffel, L. M., & Schwartz, S. L. (2001). Use of an automated device for alternative site blood glucose monitoring. *Diabetes Care*, *24*(7), 1217-1220. https://doi.org/10.2337/diacare.24.7.1217

[15] American Diabetes Association. (2025). Standards of care in diabetes. *Diabetes Care*, *48*(Suppl. 1). Retrieved July 22, 2025, from https://diabetesjournals.org/care/issue/48/Supplement_1.



CGM BACKGROUND

Monitoring glucose levels is a crucial aspect of managing diabetes, and CGM use as a tool has changed diabetes care in the following ways: allowing real-time access to glucose data, data visualization, and transfer; informed insulin delivery systems; and an emphasis on newer CGM-based glycemic targets, such as time in range (TIR) and glucose management indicator (GMI). CGM-based glycemic targets support the primary goal of self-managing diabetes to maintain glucose levels within a target range.

CGMs provide real-time glucose data and trends, aiding both type 1 and type 2 diabetes patients in managing their lifelong insulin use and management. Similarly, type 2 diabetes patients, particularly those on insulin therapy or with significant glucose fluctuations, can benefit from CGMs, which help optimize treatment and lifestyle adjustments. The data from CGMs enable patients to make more informed decisions about diet, exercise, and medication. While some substances, including acetaminophen, vitamin C, and hydroxyurea, are known to interfere with certain CGM devices by showing a higher reading than actual glucose, CGMs generally can provide a reliable, real-time measure of blood glucose.[16]

TIR, a key metric in diabetes management, measures the percentage of time that glucose levels are between 70–180 mg/dL, which is considered the target range for individuals with diabetes. For those without diabetes, a narrower range, time in tight range (TITR), between 70–140 mg/dL, may be a more beneficial target. Additionally, time above range (TAR) indicates the percentage of time glucose levels are above 180 mg/dL, while time below range (TBR) reflects the percentage of time below 70 mg/dL.[17]

GMI is another valuable metric, providing an estimate of A1C levels based on CGM data. A GMI of less than 8.0% is considered a Healthcare Effectiveness Data and Information Set (HEDIS) clinical metric and indicates adequate

[16] American Diabetes Association Professional Practice Committee. (2025). Diabetes technology: Standards of care in diabetes. *Diabetes Care*, *48*(Suppl. 1). https://doi.org/10.2337/dc25-S007

[17] Bergenstal, R. M., Beck. R. W., Close, K. L., Grunberger, G., Sacks, D. B., Kowalski, A., Brown, A. S., et al. (2018). Glucose management indicator (GMI): A new term for estimating A1C from continuous glucose monitoring. *Diabetes Care*, *41*(11), 2275-2280. https://doi.org/10.2337/dc18-1581

diabetes control. Together, these metrics offer vital insights for optimizing diabetes care and improving patient outcomes.[18,19] A full summary of these and other metrics used in the monitoring of diabetes is included in Figure 2.

FIGURE 2: METRICS USED IN DIABETES MONITORING[20]

Metric	Interpretation	Goals for Non-Pregnant Adults with Diabetes	Devices Used to Measure
A1C	Average blood sugar levels over past 3 months	<7%	Hemoglobin A1C test
Pre-prandial blood glucose	Fasting blood glucose at a given moment in time	80–130 mg/dL	Traditional BGM; CGM
Peak postprandial blood glucose	Post meal blood glucose	<180 mg/dL	Traditional BGM; CGM
Mean glucose	Mean of glucose values	Not standardized	CGM
Glucose management indicator (GMI)	Calculated value approximating A1C	Not standardized	CGM
Glucose coefficient of variation	Spread of glucose values	<=36%	CGM
Time above range (TAR) >180 mg/dL	Percent of time in hyperglycemia	<25% for most adults; <50% for older adults	CGM
Time in range (TIR) 70–180 mg/dL	Percent of time in range	>70% for most adults; >50% for older adults	CGM
Time in tight range (TITR) 70–140 mg/dL	Percent in time of tighter glucose range	Not standardized	CGM
Time below range (TBR) <54 mg/dL	Percent of time in hypoglycemia	<4% for most adults; <1% for older adults	CGM

CGM HISTORY

SMBG has changed over time, and CGMs represent a newer advancement in diabetes technology, offering several benefits over traditional fingerstick tests, which require lancets, test strips, and glucometers. Unlike fingerstick methods, CGM sensors are inserted under the skin and worn on the body for multiple days at a time, eliminating the need for frequent finger pricks. These CGM systems, which consist of a sensor, transmitter, and reader/receiver either combined or as separate devices, continuously monitor glucose levels, providing a comprehensive view of trends and fluctuations. They connect to electronic smart devices to track glucose levels and generate a GMI, which serves as a proxy for A1C—a traditional measure used to assess the severity or presence of hyperglycemia and diabetes. In Figure 3, we provide a chronology of CGM systems cleared by the FDA in the U.S.

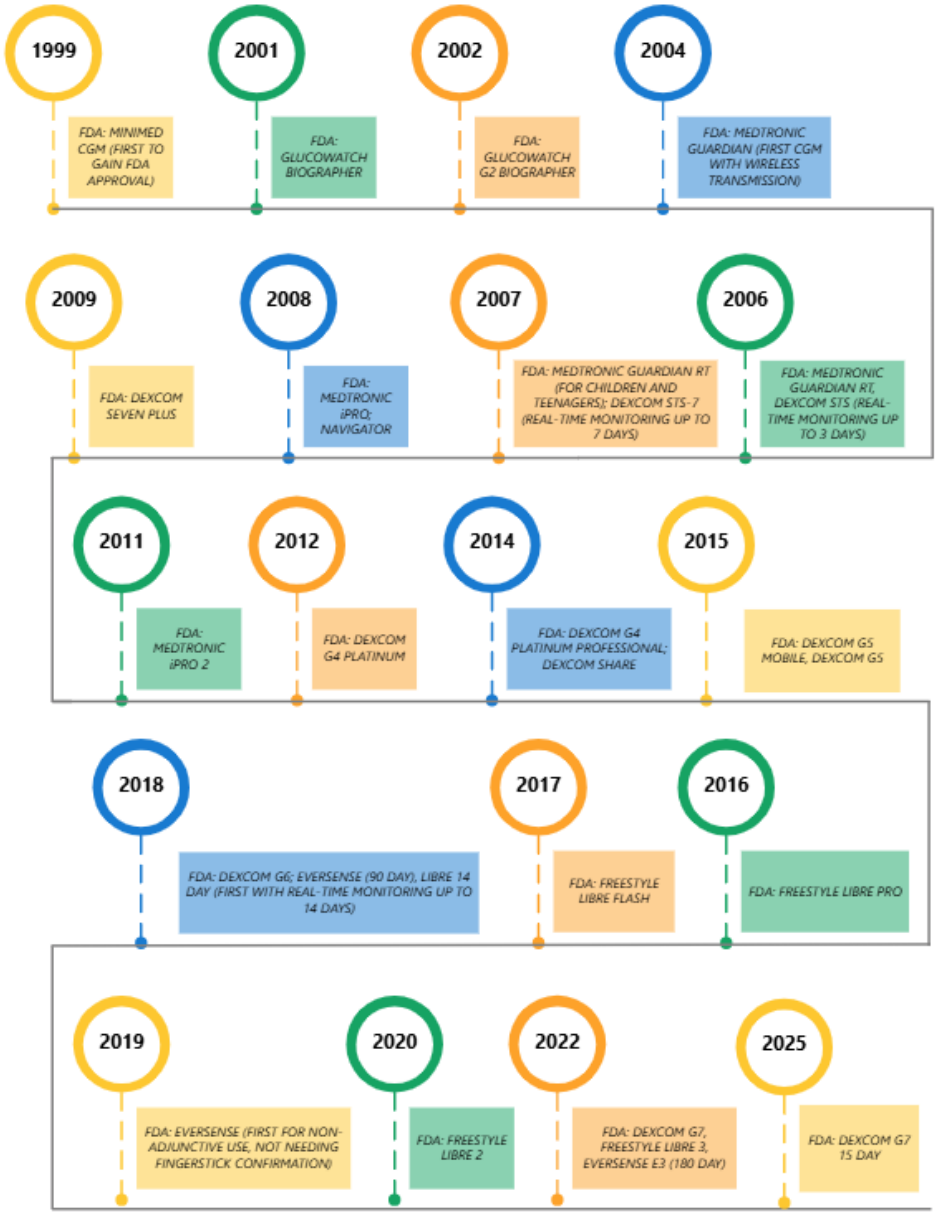
FIGURE 3: EVOLUTION OF CGM SYSTEMS[21]

[18] Kinson, L., & Inman, K. (2025). Continuous glucose monitoring in individuals with type 2 diabetes: A quality improvement program. *Clinical Diabetes*, *43*(1), 139-147. https://doi.org/10.2337/cd24-0006

[19] Bergenstal, R. M., Beck. R. W., Close, K. L., Grunberger, G., Sacks, D. B., Kowalski, A., Brown, A. S., et al. (2018). Glucose management indicator (GMI): A new term for estimating A1C from continuous glucose monitoring. *Diabetes Care*, *41*(11), 2275-2280. https://doi.org/10.2337/dc18-1581

[20] American Diabetes Association. (2025). Standards of care in diabetes. *Diabetes Care*, *48*(Suppl. 1). Retrieved July 22, 2025, from https://diabetesjournals.org/care/issue/48/Supplement_1.

[21] Didyuk, O., Econom, N., Guardia, A., Livingston, K., & Klueh, U. (2021). Continuous glucose monitoring devices: Past, present, and future focus on the history and evolution of technological innovation. *Journal of Diabetes Science and Technology*, *15*(3), 676–683. https://doi.org/10.1177/1932296819899394



CGMs have evolved significantly since their introduction in 1999. Early models required frequent fingerstick calibrations and offered only retrospective data. By the mid-2000s, advancements enabled real-time monitoring with programmable alerts and wireless transmission, enhancing both usability and clinical utility. Subsequent innovations extended sensor wear time, improved accuracy, and reduced the need for calibration. The emergence of mobile connectivity and integration with automated insulin delivery (AID) systems further transformed CGM into a key tool in diabetes management. More recent developments include implantable sensors with extended lifespans and systems requiring minimal user intervention. Despite their advantages and these advancements, CGMs come with certain drawbacks, including higher costs, the necessity for technological literacy, and, for non-implantable versions, the requirement for the sensor to always remain on the body, generally for seven to 15 days at a time. Implantable versions can be used for up to 180 days. Some CGMs have substances that may cause adhesive-related issues, irritation, or discomfort. Also, people using CGMs should have BGM products on hand to use if needed. The availability of various CGM products and the differences between devices highlight the importance of patient choice in

diabetes management. When considering different CGMs, the ADA guidelines recommend the choice of CGM be based on the individual's circumstances, preferences, and needs.[22]

This paper focuses on prescription CGMs for personal use. We include two main types in this paper: real-time CGMs (rtCGMs) and intermittently scanned CGMs (isCGMs) or flash glucose monitoring (FGM). We describe each of these more in Figure 4, as well as their advantages and disadvantages.[23] Clinic- or professional-based and integrated CGMs (iCGMs) or closed loop systems are beyond the scope of this report as they are for diagnostic or temporary purposes or are integrated with AID systems, respectively.[24] Over-the-counter (OTC) CGMs are also available but are out of scope for this review.

FIGURE 4: TYPES OF CGMS AND KEY FEATURES (OF CGMS CURRENTLY AVAILABLE IN THE U.S.)[25,26,27,28]

CGM Type	Mechanism / Functionality	Advantages	Disadvantages	Available (Sensor) Products
Real-time (rtCGM)	• Continuous display of glucose level. • Glycemic data is transmitted to receiver (e.g., insulin pump or mobile device). • Can be worn on body or implanted.	• Glycemic data can be seen on mobile app or website. • Implantable can be worn for 180 or 365 days. • Some on-body sensors can be worn for up to 15 days.	• Calibration of device may be required for some products. • Higher cost CGM.	Dexcom: G6, G7 FreeStyle: Libre 3, Libre 3 Plus Enlite Medtronic Guardian Sensor: 3, 4 Eversense (implantable): 365, E3 Simplera
Intermittently scanned (isCGM) **Flash glucose monitoring** (FGM)	• Glucose level is displayed upon sensor scan by reader or smartphone. • Upon scanning, glycemic data is transmitted to receiver	• Glycemic data can be seen on mobile app or website, but data is lost if not read every 8 hours. • Lower cost CGM. • Calibration not required. • On-body sensors can be worn for 14 days.		FreeStyle: Libre 2, Libre 14 Day

[22] ElSayed, N. A., Aleppo, G., Aroda, V. R., Bannuru, R. R., Brown, F. M., Bruemmer, D., Collins, B. S., et al. (2023). Diabetes technology: Standards of care in diabetes. *Diabetes Care*, *46*(Suppl. 1), S111-S127. https://doi.org/10.2337/dc23-S007

[23] Kesavadev, J., Saboo, B., Chawla, M., Parikh, R., Sahay, R., Joshi, S., Gupta, A., et al. (2023). The historical evolution of continuous glucose monitoring – the story of 25 years. *International Journal of Diabetes and Technology*, *2*(4), 129-136. https://doi.org/10.4103/ijdt.ijdt_16_24

[24] Grunberger, G., Sherr, J., Allende, M., Blevins, T., Bode, B., Handelsman, Y., Hellman, R., et al. (2021). American Association of Clinical Endocrinology Clinical Practice Guideline: The use of advanced technology in the management of persons with diabetes mellitus. *Endocrine Practice*, *27*(6), 505-537. http://doi.org/10.1016/j.eprac.2021.04.008

[25] Yoo, J. H., & Kim, J. H. (2023). Advances in continuous glucose monitoring and integrated devices for management of diabetes with insulin-based therapy: Improvement in glycemic control. *Diabetes & Metabolism Journal*, *47*(1), 27–41. https://doi.org/10.4093/dmj.2022.0271

[26] Usman, S. (March 30, 2025). Types of continuous glucose monitoring (CGM) devices for diabetes and how to use. SemicHealth. Retrieved July 22, 2025, from https://www.semichealth.com/public-health/types-of-continuous-glucose-monitoring-cgm-and-how-to-use.

[27] Eversense. (n.d.). Safety information. Retrieved July 22, 2025, from https://www.eversensecgm.com/safety-information/.

[28] Mihai, D. A., Stefan, D. S., Stegaru, D., Bernea, G. E., Vacaroiu, I. A., Papacocea, T., Lupușoru, M. O. D., et al. (2022). Continuous glucose monitoring devices: A brief presentation (Review). *Experimental and Therapeutic Medicine*, *23*(2), 174. https://doi.org/10.3892/etm.2021.11097

CGM Type	Mechanism / Functionality	Advantages	Disadvantages	Available (Sensor) Products
	(mobile device) for viewing or storage.			
Common to both CGM types	• Continuous glucose measurement	• Alerts can be set for glucose thresholds (hyper/hypoglycemia) (some isCGMs). • Can integrate with insulin delivery system (only some isCGMs).	• Not widely covered by insurance for patients with type 2 diabetes who do not use insulin. • May cause skin reactions to adhesive.	

PAYER COVERAGE

For years, the ADA clinical practice guidelines included a recommendation for use of rtCGM in diabetes management for patients who are receiving insulin. Accordingly, most payers cover CGMs for people with type 1 and type 2 diabetes who use insulin. For the first time, the 2025 ADA guidelines added a new recommendation to consider the use of CGMs in adults with type 2 diabetes treated with non-insulin, glucose-lowering medications, representing a major change in CGM guidance.[22] The 2022 American Association of Clinical Endocrinology clinical practice guidelines recommend rtCGM or isCGM for patients with type 2 diabetes who use insulin or have a high risk for hypoglycemia and/or hypoglycemia unawareness.[29] Despite these recommendations, CGM payer coverage for non-insulin utilizers is more limited. CGMs available without a prescription are not widely covered by insurance for any population, though health savings accounts (HSAs) could be used to purchase them.

Among commercial plans, CGM coverage varies by payer, with some more restrictive than others. While it was recently reported that all three of the large pharmacy benefit managers (PBMs) in the U.S. cover CGMs for anyone with diabetes, a review of publicly available medical policies for different payers suggests that coverage may still be limited.[30,31] Some payers do not require prior authorization for CGMs; therefore, individuals with type 2 diabetes who do not utilize insulin would easily be able to access CGMs. Many commercial payers do, however, require prior authorization for use according to the respective device's FDA label. The prior authorization criteria vary, with the most restrictive only allowing use for individuals with type 1 diabetes, although it is more common for commercial payers to allow use in those with type 1 or type 2 diabetes who use insulin, and a growing number of payers are allowing coverage for non-insulin users. Others cover CGMs for patients with type 2 diabetes who use insulin or experience significant hypoglycemia or have a history of multiple hypoglycemic events. Implantable CGM devices typically require insulin use for coverage, but carriers may cover CGMs for non-insulin users with a life-threatening or

[29] Blonde, L., Umpierrez, G. E., Reddy, S. S., McGill, J. B., Berga, S. L., Bush, M., Chandrasekaran, S., et al. (2022). American Association of Clinical Endocrinology Clinical Practice Guideline: Developing a diabetes mellitus comprehensive care plan—2022 Update. *Endocrine Practice*, *28*(10), 923-1049. https://doi.org10.1016/j.eprac.2022.08.002

[30] Reuter, E. (May 16, 2025). Dexcom CEO says CGMs fit MAHA agenda 'very nicely'; Tandem preps for new products. MedTech Dive. Retrieved July 22, 2025, from https://www.medtechdive.com/news/dexcom-cgm-tandem-type-2-earnings/748341/.

[31] Danatech. (n.d.). CGM Insurance Coverage Tool. Association of Diabetes Care & Education Specialists. Retrieved July 22, 2025, from https://www.adces.org/education/danatech/glucose-monitoring/continuous-glucose-monitors-(cgm)/cgm-insurance-coverage-look-up.

recurrent severe (level 2) hypoglycemia event(s) persisting despite adjustments to medications and treatment plan.[31,32,33,34,35,36]

In Medicare, CGMs are covered under the Part B benefit. A new Medicare local coverage determination (LCD) policy went into effect in 2023 that provides CGM coverage for patients with diabetes who are treated with insulin or have a history of problematic hypoglycemia.[37] Those with a history of hypoglycemia are not required to be taking insulin to be approved for CGM use. This LCD has been adopted across all four durable medical equipment (DME) Medicare Administrative Contractor (MAC) jurisdictions and therefore applies to all Medicare beneficiaries.

In Medicaid, as of 2023, 45 states and D.C. provide some level of CGM coverage; however, that coverage varies widely by state.[38] Three states only provide pediatric coverage, nine states only provide coverage for those with type 1 diabetes, and 33 states provide coverage for both type 1 and type 2 diabetes. Even among states providing coverage for type 2 diabetes, criteria vary, some aligning with the Medicare criteria, and others being more or less restrictive.[39]

Review of available literature

While there are many peer-reviewed, published studies assessing outcomes related to CGMs in patients with type 1 diabetes or type 2 diabetes who use insulin, fewer assess these outcomes in non-insulin utilizers. We utilized PubMed to identify studies for inclusion, using searches for combinations of the following terms: “CGM,” “continuous glucose monitoring,” “type 2 diabetes,” “type 2,” “non-insulin,” “cost-effective,” and “quality.” Figure 5 shows the number of studies identified, screened, and included in our review. Out of 265 papers initially identified, we ultimately include 20 studies in our review that report on patient-owned CGM outcomes in non-insulin utilizers with type 2 diabetes. In this section we discuss the outcomes of these available studies, focusing on disease control, healthcare resource utilization, quality of life, and economic findings.

FIGURE 5: SELECTION OF STUDIES FOR INCLUSION

[32] UnitedHealthcare. (May 1, 2025). Continuous Glucose Monitoring and Insulin Delivery for Managing Diabetes (Policy No. 2025T0347UU). Retrieved July 22, 2025, from https://www.uhcprovider.com/content/dam/provider/docs/public/policies/comm-medical-drug/continuous-glucose-monitoring-insulin-delivery-managing-diabetes.pdf.

[33] Express Scripts. (January 17, 2024). Diabetes – Continuous Glucose Monitoring Systems Prior Authorization Policy. Retrieved July 22, 2025, from https://www.express-scripts.com/sites/default/files/policies/Diabetes%20-%20Continuous%20Glucose%20Monitoring%20Systems%20PA%20Policy.pdf.

[34] Aetna. (March 19, 2025). Medical Clinical Policy Bulletin: Diabetes Tests, Programs and Supplies. Retrieved July 22, 2025, from https://www.aetna.com/cpb/medical/data/1_99/0070.html.

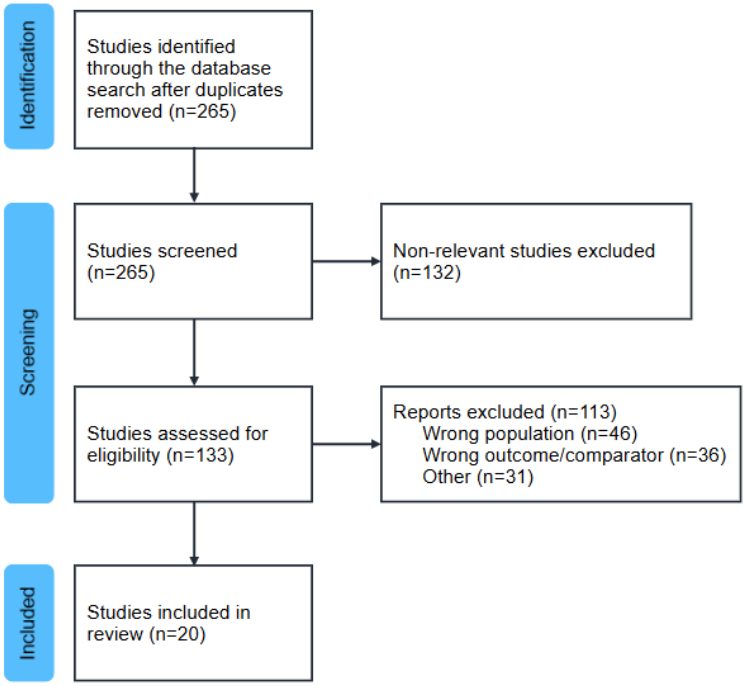
[35] Anthem. (April 1, 2025). Clinical UM Guideline: Continuous Glucose Monitoring Devices (Guideline No. CG-DME-42). Retrieved July 22, 2025, from https://www.anthem.com/dam/medpolicies/abcbs/active/guidelines/gl_pw_d073854.html.

[36] Health Care Service Corporation. (n.d.). Medical Policies. Retrieved July 22, 2025, from https://medicalpolicy.hcsc.com/activePolicyPage?path=dme/DME101.005_2025-02-01&corpEntCd=HCSC.

[37] Centers for Medicare and Medicaid Services. (October 1, 2024). Local Coverage Determination (LCD): Glucose Monitors (L33822). Retrieved July 22, 2025, from https://www.cms.gov/medicare-coverage-database/view/lcd.aspx?LCDId=33822&DocID=L33822.

[38] Center for Health Care Strategies. (July 2023). Continuous glucose monitor access for Medicaid beneficiaries living with diabetes: State-by-state coverage. Retrieved July 22, 2025, from https://www.chcs.org/media/CGM-Access-for-Medicaid-Beneficiaries-Living-with-Diabetes-State-By-State-Coverage.pdf.

[39] Yan, K., & Sainz, N. (September 20, 2021). CGM and Medicaid: Who’s covered? diaTribe Change. Retrieved July 22, 2025, from https://diatribechange.org/news/cgm-and-medicaid-whos-covered.



DISEASE CONTROL

We identified several studies evaluating disease control outcomes related to CGM use in patients with type 2 diabetes who do not utilize insulin. While this population was generally a small subset of the population included in each study, the findings indicate that CGMs assist with disease control for these individuals. Figure 6 summarizes available literature related to disease-related metrics. While studies of implantable CGMs include participants with type 2 diabetes and no insulin use, their outcomes are reported in aggregate and are therefore not listed.

FIGURE 6: SUMMARY OF LITERATURE WITH DISEASE CONTROL FINDINGS

Study (first author, year)	Study Design	Non-insulin / Total	Disease-Related Metrics Assessed	Summary of Non-insulin Utilizer Findings
Lau (2024) [40]	Randomized controlled, open-label trial	105/105	A1C	CFGM group had 0.65% lower A1C at week 12 (with 6 weeks of continuous CGM use and two structured 1:1 virtual visits with a certified diabetes educator).
Wright (2024) [41]	Retrospective Observational Study	16,078/24,724 (unmatched)	A1C	A1C difference in difference between GLP-1 plus CGM group versus GLP-1 only group was -0.68% at 6 month follow up.

[40] Lau, D., Manca, D. P., Singh, P., Perry, T., Olu-Jordan, I., Zhang, J. R., Rahim, G., et al. (2024). The effectiveness of continuous glucose monitoring with remote telemonitoring-enabled virtual educator visits in adults with non-insulin dependent type 2 diabetes: A randomized trial. *Diabetes Research and Clinical Practice*, *217*. https://doi.org/10.1016/j.diabres.2024.111899

[41] Wright, E. E., Roberts, G. J., Chuang, J. S., Nabutovsky, Y., Virdi, N., & Miller, E. (2024). Initiating GLP-1 therapy in combination with FreeStyle Libre provides greater benefit compared with GLP-1 therapy alone. *Diabetes Technology & Therapeutics*, *26*(10), 754-762. https://doi.org/10.1089/dia.2024.0015

Study (first author, year)	Study Design	Non-insulin / Total	Disease-Related Metrics Assessed	Summary of Non-insulin Utilizer Findings
Martens (2025) [42]	Randomized, open-label, prospective	72/72	TAR, TIR	Mean TAR decreased by 28% in CGM alone group and 23% in CGM plus food logging app at 3 months from baseline. Mean TIR increased by 27% in CGM alone group and 23% in CGM plus food logging app at 3 months from baseline.
Wright (2021) [43]	Retrospective Observational Study	728/1,034	A1C	Use of CGM was associated with an A1C reduction of 1.6% (10.1% to 8.5%) at study endpoint (mean follow up was 159 days).
Miller (2024) [44]	Retrospective Observational Study	432/1,454	A1C	With concomitant use of GLP-1, A1C reduced by 1.7% (from 9.6% to 7.9%) at 6 months post CGM acquisition.
Aronson (2022) [45]	Randomized, controlled, open label	116/116	TIR, TAR	Greater TIR (9.9% or 2.4 hours) and less TAR (8.1% or 1.9 hours) in CGM users plus DSME compared to DSME alone. Although A1C reduction was greater in the CGM group, it was not statistically significant. TBR and hypoglycemic events were not significantly different between the groups. Participants utilized other medications for type 2 diabetes, including metformin, sulfonylurea, SGLT2i, DPP-4i, and GLP-1.
Layne (2024) [46]	Retrospective Observational Study	3,840/3,840	Various CGM metrics	Post initiation of CGM, study observed improvements in the TIR, TITR, and TAR glucose metrics 6 and 12 months after baseline. TIR improved from 41.7% (baseline) to 56.8% and 59.0% at 6 and 12 months, respectively. TITR improved from 12.1% (baseline) to 25.9% and 28.6% at 6 and 12 months, respectively. TAR improved from 58.2% (baseline) to 43.1% and 40.7%, at 6 and 12 months, respectively. GMI fell by 0.5% from 8.1% to 7.6% at 12 months.

[42] Martens, T. W., Willis, H. J., Bergenstal, R. M., Kruger, D. F., Karslioglu-French, E., & Steenkamp, D. W. (2025). A randomized controlled trial using continuous glucose monitoring to guide food choices and diabetes self-care in people with type 2 diabetes not taking insulin. *Diabetes Technology & Therapeutics*, *27*(4), 261-270. https://doi.org/10.1089/dia.2024.0579

[43] Wright, E. E., Jr., Kerr, M. S. D., Reyes, I. J., Nabutovsky, Y., & Miller, E. (2021). Use of flash continuous glucose monitoring is associated with A1C reduction in people with type 2 diabetes treated with basal insulin or noninsulin therapy. *Diabetes Spectrum*, *34*(2), 184–189. https://doi.org/10.2337/ds20-0069

[44] Miller, E., Chuang, J. S., Roberts, G. J., Nabutovsky, Y., Virdi, N., & Wright, E. E., Jr. (2024). Association of changes in A1C following continuous glucose monitoring acquisition in people with sub-optimally treated type 2 diabetes taking GLP-1 RA therapy. *Diabetes Therapy*, *15*, 2027–2038. https://doi.org/10.1007/s13300-024-01619-1

[45] Aronson, R., Brown, R. E., Chu, L., Bajaj, H. S., Khandwala, H., Abitbol, A., Malakieh, N., et al. (2023). IMpact of flash glucose Monitoring in pEople with type 2 Diabetes Inadequately controlled with non-insulin Antihyperglycaemic ThErapy (IMMEDIATE): A randomized controlled trial. *Diabetes, Obesity and Metabolism*, *25*(4), 899-1139. https://doi.org/10.1111/dom.14949

[46] Layne, J. E., Jepson, L. H., Carite, A. M., Parkin, C. G., & Bergenstal, R. M. (2024). Long-term improvements in glycemic control with Dexcom CGM use in adults with noninsulin-treated type 2 diabetes. *Diabetes Technology & Therapeutics*, *26*(12), 885-983. https://doi.org/10.1089/dia.2024.0197

Study (first author, year)	Study Design	Non-insulin / Total	Disease-Related Metrics Assessed	Summary of Non-insulin Utilizer Findings
Dowd (2023) [47]	Retrospective Observational Study	6,979/33,685	TIR, TAR, TBR	Comparison of non-insulin type 2 diabetes CGM utilizers to type 1 diabetes (T1D) CGM utilizers. TIR 70.8% compared to 52.1% in T1D group TAR 28.5% compared to 45.5% in T1D group TBR 0.8% compared to 2.4% in T1D group
Dehghani (2021) [48]	Prospective, unblinded observational	192/665	TIR *(54-180 mg/dL)*	Improved TIR % from baseline (days 2-3) compared to days 8-9 after 10 days of CGM use.
Ogawa (2024) [49] (Japan)	Retrospective, cross-sectional study	740/3,463	TIR, %TIR (>70%)	From 334.3 (mean) days of CGM data, the mean TIR % was 84.3%, and 87.4% of users met a target %TIR >70%. (Pre-CGM baseline data is not available.)
Price (2021) [50]	Prospective, randomized, pilot trial	70/70	A1C, TIR	Episodic rtCGM (n=45) versus BGM (n=23) RtCGM use was episodic, worn for 10 days each at week 0, 4, and 8. BGM group monitored daily and used rtCGM for 10 days at week 0 and 8 for baseline and comparison metrics, respectively. At week 8, % TIR change from run-in was 6.9% in CGM group and –13.3% in BGM group. Mean change in baseline A1C at week 12 was -0.5% in CGM and –0.3% in BGM group, but did not meet between group significance and A1C reduction was not sustained at month 9.
Shields (2024) [51]	Prospective, embedded effectiveness (interventional) study with retrospective matched control patients	117/182	A1C	Intervention (n=67) versus control (n=50) Users of CGM had an 0.66% greater reduction in A1C at 3 months. CGM group had 13.2% more patients with A1C <7 and 18.7% more with A1C <8 compared with control group.

[47] Dowd, R., Jepson, L. H., Green, C. R., Norman, G. J., Thomas, R., & Leone, K. (2023). Glycemic outcomes and feature set engagement among real-time continuous glucose monitoring users with type 1 or non-insulin-treated type 2 diabetes: Retrospective analysis of real-world data. *JMIR Diabetes*, *8*, e43991. https://doi.org/10.2196/43991

[48] Dehghani Zahedani, A., Shariat Torbaghan, S., Rahili, S., Karlin, K., Scilley, D., Thakkar, R., Saberi, M., et al. (2021). Improvement in glucose regulation using a digital tracker and continuous glucose monitoring in healthy adults and those with type 2 diabetes. *Diabetes Therapy*, *12*(7), 1871–1886. https://doi.org/10.1007/s13300-021-01081-3

[49] Ogawa, W., Urakami, T., Kadowaki, T., Kao, K., Brandner, L., Shimizu, K., & Dunn, T. C. (2024). Glycemic metrics in Japanese isCGM users – analysis by diabetes type and therapy. *Journal of Diabetes Investigation*, *15*(10), 1483–1488. https://doi.org/10.1111/jdi.14233

[50] Price, D. A., Deng, Q., Kipnes, M., & Beck, S. E. (2021). Episodic real-time CGM use in adults with type 2 diabetes: Results of a pilot randomized controlled trial. *Diabetes Therapy*, *12*(7), 2089–2099. https://doi.org/10.1007/s13300-021-01086-y

[51] Shields, S., Thomas, R., Durham, J., Moran, J., Clary, J., & Ciemins, E. L. (2024). Continuous glucose monitoring among adults with type 2 diabetes receiving noninsulin or basal insulin therapy in primary care. *Scientific Reports*, *14*(1), 31990. https://doi.org/10.1038/s41598-024-83548-4

Study (first author, year)	Study Design	Non-insulin / Total	Disease-Related Metrics Assessed	Summary of Non-insulin Utilizer Findings
Miller (2021) [52]	Retrospective cohort study	6,298/10,282	Acute diabetes-related events (ADEs)	ADE were compared 6 months prior to and post CGM acquisition. ADE (majority being outpatient emergency events) rates decreased from 0.055 to 0.041 events per patient-year.
Ratzki-Leewing (2025) [53] (Canada)	Retrospective Observational Study	2,688/20,253	A1C	Assessed A1C changes following CGM initiation GLP-1 non-insulin utilizers: -Age >65: A1C reduced by 0.6% -Age ≤65: A1C reduced by 0.6% Oral therapy only: -Age >65: A1C reduced by 0.3% -Age ≤65: A1C reduced by 0.6%

A1C = hemoglobin A1C test; ADE = acute diabetes-related events; BGM = blood glucose monitoring; CGM = continuous glucose monitor; DSME = diabetes self-management education; GMI = glucose management indicator; rtCGM = real-time CGM; TAR = time above range; TBR = time below range; TIR = time in range; TITR = time in tight range

Additional clinical studies not open to the public were not included in this review but report clinical outcomes for patients living with type 2 diabetes who do not require insulin use. One example is a recent 2024 meta-analysis of six trials, which also found improved glycemic control with CGMs compared to BGM, similar to the studies discussed in Figure 6. [54]

HEALTHCARE RESOURCE UTILIZATION

Beyond changes to clinical metrics related to BGM, another outcome of interest to payers when determining coverage of these products is healthcare resource utilization. A large retrospective claims analysis including 25,269 adults with type 2 diabetes, an A1C between 7% and 15%, and who were not on insulin measured changes pre- and post-CGM initiation in all cause hospitalizations, acute diabetes-related hospitalizations, and acute diabetes-related events requiring ER visits.[55] All cause hospitalizations were reduced at six and 12 months post-CGM initiation (-14.2%, -10.1%, respectively). Reductions were also observed in acute diabetes-related hospitalizations (-33.6% and -31.0%) and acute diabetes-related events requiring ER visits (-30.1% and -30.7%), respectively. Of note, the study time period was during COVID-19, which could have impacted healthcare resource utilization, and hospitalizations in particular.

A 2025 analysis of administrative claims evaluated changes in healthcare utilization following CGM initiation for 20,253 individuals with type 2 diabetes.[56] The analysis included two cohorts of non-insulin utilizers: GLP-1 utilizers

[52] Miller, E., Kerr, M. S. D., Roberts, G. J., Nabutovsky, Y., & Wright, E. (2021). Flash CGM associated with event reduction in nonintensive diabetes therapy. *The American Journal of Managed Care*, *27*(11), e372–e377. https://doi.org/10.37765/ajmc.2021.88780

[53] Ratzki-Leewing, A., Harris, S. B., Rabasa-Lhoret, R., & Poon, Y. (2025). FRONTIER: FreeStyle Libre system use in Ontario among people with diabetes mellitus in the IC/ES database – evidence from real-world practice: Patients using intensive insulin. *Diabetes Technology & Therapeutics*, *27*(6), 449–459. https://doi.org/10.1089/dia.2024.0609

[54] Ferreira, R. O. M., Trevisan, T., Pasqualotto, E., Chavez, M. P., Marques, B. F., Lamounier, R. N., & van de Sande-Lee, S. (2024). Continuous glucose monitoring systems in noninsulin-treated people with type 2 diabetes: A systematic review and meta-analysis of randomized controlled trials. *Diabetes Technology & Therapeutics*, *26*(4), 252-262. https://doi.org/10.1089/dia.2023.0390

[55] Garg, S. K., Hirsch, I. B., Repetto, E., Snell-Bergeon, J., Ulmer, B., Perkins, C., & Bergenstal, R. M. (2024). Impact of continuous glucose monitoring on hospitalizations and glucose control in people with type 2 diabetes: Real-world analysis. *Diabetes, Obesity & Metabolism*, *26*(11), 5202–5210. https://doi.org/10.1111/dom.15866

[56] Ratzki-Leewing A., Harris S. B., Rabasa-Lhoret R., Poon Y. (2025). FRONTIER: FreeStyle Libre system use in Ontario among people with diabetes in the IC/ES database – evidence from real-world practice: Patients on basal insulin, glucagon-like peptide 1 receptor agonist or oral therapies. *Diabetes, Obesity & Metabolism*, *27*(5), 2637-2646. https://doi.org/10.1111/dom.16266

and oral therapy utilizers (as well as two cohorts of insulin utilizers). Among those on GLP-1s who did not use insulin, results were mixed, with adults less than 65 years old experiencing increased ER visits and hospitalizations, while adults over the age of 65 experienced non-statistically significant decreases in ER visits and hospitalizations per person per year (PPPY). We note that baselined rates of ER visits and hospitalizations were lower in this cohort than the other cohorts studied. Results were more consistent among those on oral therapy only. Adults age 65 and under experienced a 28.1% decrease in ER visits and a 31.7% decrease in hospitalizations, and adults over the age of 65 on oral therapies experienced a 13.1% decrease in ER visits and a 26.3% decrease in hospitalizations. Notably, this study also partially took place during the COVID-19 pandemic, which may have impacted the outcomes.

A 2024 retrospective study of the French national claims database assessed hospitalization rates of 1,272 individuals with non-insulin-treated type 2 diabetes who initiated use of a CGM.[57] Prior to CGM initiation, 7.15% had at least one hospitalization for an acute diabetes-related event. At 12 and 24 months post-CGM initiation, 2.52% and 2.83%, respectively, had at least one hospitalization for an acute diabetes-related event. These findings suggest that CGM use may reduce acute diabetes events, and therefore hospitalizations, in non-insulin-treated individuals with type 2 diabetes.

PATIENT QUALITY OF LIFE

Most quality-of-life studies are limited to insulin utilizers; however, we identified one prospective quality improvement study aimed to assess the change in A1C levels after three months of CGM use in individuals treated with and without insulin.[58] Those not using insulin were taking GLP-1s. Three months after the study, a survey conducted with 65 patients revealed that CGM use improved their ability to take medication, with a score of 3.6 out of 5. The survey also indicated that CGM was easy to use, scoring 4.8 out of 5, positively affected glucose levels with a score of 4.6 out of 5, and influenced nutritional choices with a score of 4.2 out of 5.

ECONOMIC CONSIDERATIONS

Multiple studies have assessed the cost-effectiveness of CGMs (and older self-monitoring fingerstick methods) in type 1 and type 2 diabetes patients who utilize insulin, but literature is limited for non-insulin utilizers. However, there are a few studies that include non-insulin utilizers that suggest CGM may be cost-effective in this population.

A 2025 microsimulation cost-effectiveness study evaluated quality-adjusted life year (QALY) changes in individuals using GLP-1s plus CGM versus GLP-1s alone.[59] The analysis included intensive insulin utilizers, basal insulin utilizers, and non-insulin utilizers but only reported results separately for non-intensive insulin utilizers (non-insulin utilizers were not split out). In the cohort not using intensive insulin, the incremental cost-effectiveness ratio (ICER) for GLP-1 plus CGM users versus GLP-1s alone was $43,095 per QALY. For the non-intensive insulin utilizers (includes those only on basal insulin as well as non-insulin utilizers), total lifetime costs in the GLP-1 plus CGM group were $9,912 higher than the GLP-1 alone group, assuming continuous use. Separate results were not reported for non-insulin utilizers. These results suggested a 64% likelihood of being cost-effective in this population at a willingness to pay threshold of $100,000 per QALY.

A 2024 study examined cost-effectiveness of a CGM in comparison to BGM from a Canadian private healthcare perspective.[60] The model demonstrated that a particular CGM is cost-effective compared to SMBG in patients with type 2 diabetes who didn't use insulin. The results of this study are specific to Canada and cannot be generalized to other countries' healthcare systems, as many differences exist.

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[57] Riveline, J. P., Levrat-Guillen, F., Detournay, B., Vicaut, E., De Pouvourville, G., Emery, C., & Guerci, B. (2024). 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 Technology & Therapeutics*, *26*(12), 932–938. https://doi.org/10.1089/dia.2024.0171

[58] Kinson, L., & Inman, K. (2025). Continuous glucose monitoring in individuals with type 2 diabetes: A quality improvement program. *Clinical Diabetes*, *43*(1), 139-147. https://doi.org/10.2337/cd24-0006

[59] Wright, E. E., Miller, E., Bindal, A., Poon, Y. (2025). Addition of continuous glucose monitoring to glucagon-like peptide 1 receptor agonist treatment for type 2 diabetes mellitus – an economic evaluation. *Journal of Managed Care & Specialty Pharmacy*, *31*(2), 127-136. https://doi.org/10.18553/jmcp.2025.24253

[60] Harris, S., Cimino, S., Nguyen, Y., Szafrfanksi, K., & Poon, Y. (2025). Cost-effectiveness of FreeStyle Libre for glucose self-management among people with diabetes mellitus: A Canadian private payer perspective. *Diabetes Therapy*, *16*, 169–186. https://doi.org/10.1007/s13300-024-01677-5

In a 2022 retrospective claims analysis of 571 individuals with type 2 diabetes, average diabetes-related medical costs per patient per month (PPPM) decreased by $424 following CGM initiation, which was driven by reduced diabetes-related inpatient medical costs.[61] Roughly 90% of participants in this study utilized insulin, and results for non-insulin utilizers were not reported separately; therefore it is not clear if these results translate to a non-insulin-utilizing population. Additionally, these results do not incorporate the cost of the CGM into the calculation of diabetes-related medical costs, which would reduce the reported savings.

A 2016 analysis modeled the cost-effectiveness of CGMs compared to self-monitoring by fingerstick in individuals with type 2 diabetes not on prandial insulin.[62] CGM was found to be cost-effective in this population, resulting in an incremental cost of $653 per patient over a lifetime, and ICERs of $6,293 per life year (LY) gained and $8,898 per QALY gained. The results suggested a 70% likelihood of CGMs being cost-effective in this population at the willingness to pay threshold of $100,000 per QALY. We note that this study did include those taking basal insulin, which accounted for roughly one-third of participants. Results were not reported separately for those who do not take any insulin.

These studies support the idea that CGMs may be cost-effective in individuals who do not use insulin or who are on a non-intensive insulin regimen, but additional studies are needed to better support this conclusion.

[61] Norman, G. J., Paudel, M. L., Parkin, C. G., Bancroft, T., & Lynch, P. M. (2022). Association between real-time continuous glucose monitor use and diabetes-related medical costs for patients with type 2 diabetes. *Diabetes Technology & Therapeutics*, *24*(7), 520-524. https://doi.org/10.1089/dia.2021.0525

[62] Fonda, S. J., Graham, C., Munakata, J., Powers, J. M., Price, D., & Vigersky, R. A. (2016). The cost-effectiveness of real-time continuous glucose monitoring (RT-CGM) in type 2 diabetes. *Journal of Diabetes Science and Technology*, *10*(4),898-904. https://doi.org/10.1177/1932296816628547

Conclusions

The evidence reviewed in this report suggests that CGM holds significant promise for patients with type 2 diabetes who are not treated with insulin. Findings from both prospective and retrospective analyses indicate that CGMs can support better glycemic control, reduce acute diabetes-related events, and potentially lower healthcare costs. We did not identify any studies that suggested poor results associated with the use of CGMs in this population. Though economic data specific to non-insulin users is sparse, the available evidence suggests that CGMs may be cost-effective when used appropriately, particularly in individuals with higher baseline A1C or at risk for complications.

Furthermore, quality-of-life studies, although limited, reveal a positive user experience, with many patients reporting increased confidence in managing their diabetes, better dietary decision making, and ease of use. These factors play a crucial role in the long-term success of diabetes management. The available literature supports the notion that CGMs can enhance disease management by providing actionable, continuous glucose data that facilitates more informed decision making regarding lifestyle modifications and medication adjustments.

While further research and findings from real-world data would provide additional support for the long-term outcomes and cost-effectiveness in this specific population, available literature and current diabetes treatment guidelines support the narrative that CGMs help non-insulin-dependent patients with type 2 diabetes manage their disease more proactively and effectively. The evidence base is growing, and healthcare systems and payers should consider these findings when evaluating future coverage and clinical guideline decisions.

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