clear.bio

EAT
MEASURE
KNOW
ACT

Tackling the Root Cause of Type 2 Diabetes Mellitus

KEY PILLARS OF HEALTHCARE

PATIENT EXPERIENCE
Patients Receive Informative Insights and Provide Positive Feedback

CLINICIAN EXPERIENCE
Clear.bio Supports Healthcare Professionals by Improving Consultations and Reducing Time per Patient

HEALTH OUTCOMES
Evidence-Based Results Suggest Enhanced Nutritional Awareness, Better Control, and Improvements in Glycemic Variables

HEALTHCARE SYSTEM
Higher Efficiency, More Cost-Savings, Easy Scalability, and Lower Long-Term Health Risks Make Clear.bio the Perfect Solution for Type 2 Diabetes

OUR MISSION IS RE-MISSION

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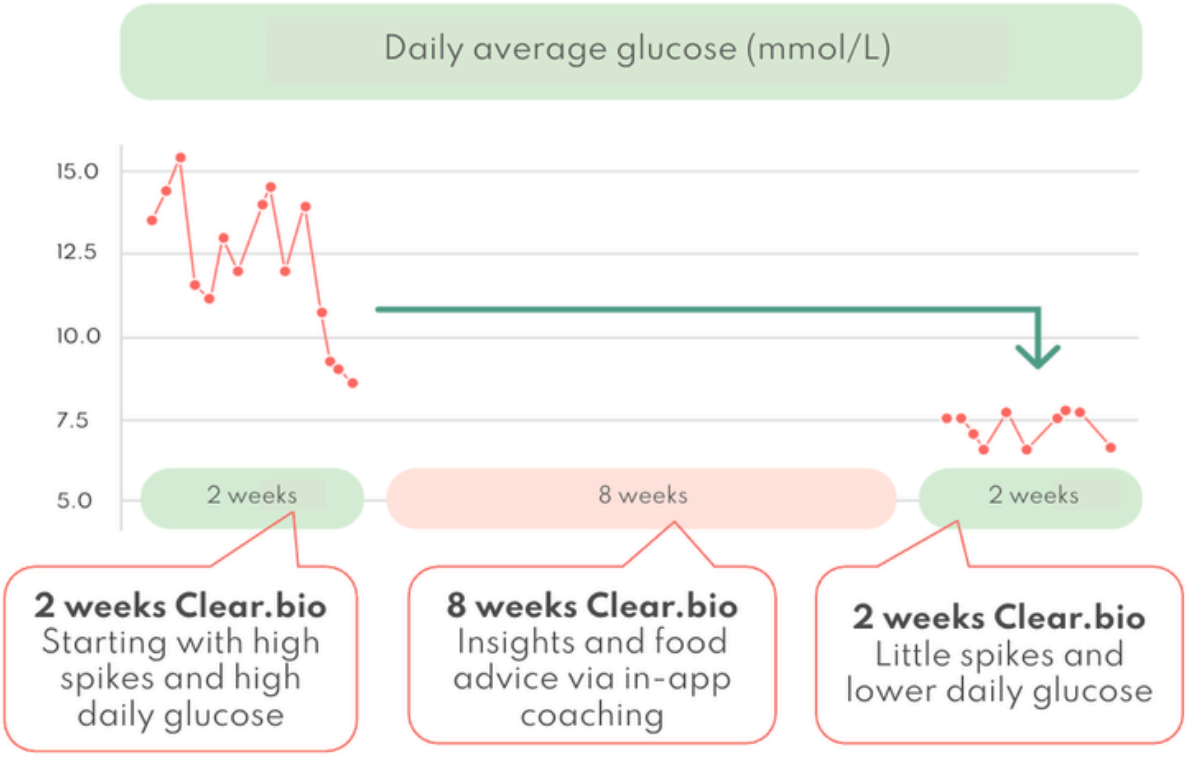
Personalized Nutrition as Key Strategy in Managing Type 2 Diabetes

The prevalence of type 2 diabetes mellitus (T2DM) continues to rise, driven by Western diets and sedentary lifestyles (1). Standard treatment of this disease often relies on medication, which manages symptoms but not the underlying cause (2). Adapting a healthier lifestyle is increasingly crucial, yet patients struggle to change habits and sustain long-term dietary adjustments. Additionally, existing dietary methods have limited effect since there are large inter-individual differences in physiological responses to identical meals (3).

This highlights the need for personalized diets to better regulate post-prandial glucose responses (PPGRs) and lower overall glucose levels. At the same time, the growing number of patients with chronic diseases is putting significant pressure on the healthcare system (4). This underscores the urgent need for solutions that not only empower patients to manage their condition effectively but also help relieve the broader strain on healthcare resources.

Clear.bio offers a digital, personalized nutrition intervention that addresses these challenges. The nutritional intervention was clinically researched during this 12-week EAT-MEASURE-KNOW- ACT study, where Clear.bio users tracked their meals (EAT), gathered glucose data via a continuous glucose monitoring sensors (MEASURE), received real-time biofeedback (KNOW), and changed their diet accordingly (ACT). Within two weeks, most participants began engaging with their plan, and after 12 weeks, this study demonstrated clinically meaningful results: **69%** of the participants had a mean reduction in average glucose of **1.69 mmol/L** (estimated HbA1c reduction of **11.6 mmol/mol**) and a mean increase in their TIR of **20%.** Additionally, participants had greater motivation to change their lifestyle and improved self-management of their disease. The healthcare system anticipated substantial cost-savings through reduced complications. Additionally, healthcare professionals also benefited from this intervention by more informed consultations and smoother integration into care pathways. Therefore, **Clear.bio improves all four pillars of healthcare**.



30%

The prevalence of T2DM continues to rise, **highlighting the growing need for effective strategies to manage and prevent this chronic condition.** The population of people with T2DM keeps rising globally. With around 1000 newly diagnosed cases weekly in The Netherlands, it is one of the fastest growing chronic diseases. Moreover, a **30% increase** is expected in 2040, with 1.3 million Dutch people having T2DM (5).

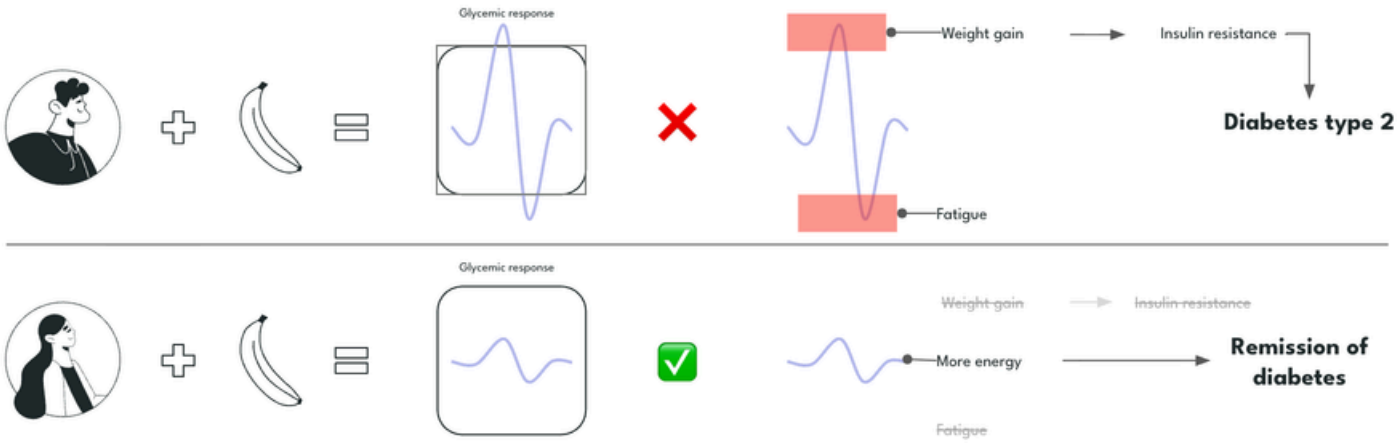
Addressing Individualised Diabetes Care Through the Four Pillars: Patients, Outcomes, Providers, and the Healthcare System

Adopting and maintaining a healthy diet is crucial for individuals with T2DM, yet existing dietary methods often fall short. In the Netherlands there is a growing public interest in healthier eating, with many people increasingly aware of how food affects their health. However, the rising demand for professional nutritional advice has led to a situation where existing dietitians in the Netherlands are struggling to keep up with the requests (6). **This gap between demand and available professional guidance accentuates the need for accessible, scalable nutrition support solutions.**

Moreover, not only dietitians have problems with rising patient numbers, long-waiting lists, and shortages of professionals. The entire Dutch healthcare system is facing similar problems. These challenges highlight the need for solutions that not only support patients in managing their condition, but also alleviate the burden on healthcare providers in a cost-effective manner. To ensure that high-quality and affordable care remains accessible in the future, transformation and innovation in care delivery are essential (7).

Clear.bio addresses these challenges through a data-driven, personalized nutritional intervention. By providing patients with real-time insights into how their bodies respond to nutrition, Clear.bio empowers self-management, encourages sustainable behavior change, and reduces healthcare costs. **This study demonstrates measurable improvements in key outcomes, including haemoglobin A1c (HbA1c), fasting glucose (FG), and Time-In-Range (TIR), as well as increased patient engagement, nutritional awareness, and perceived control over their diet.**

The picture below shows that individuals respond very differently to identical meals. As outlined, a very unstable glycemic response to nutrition is linked to increased development of T2DM, whereas a stable response enhances remission of the disease (3). This is exactly what the Clear.bio treatment focusses on. With the use of real-time glucometry, the PPGR can be measured, thereby providing insights into which foods an individual respons well to, and which they do not. This paper will give a detailed description of a study performed by Clear.bio on a part of its patient population.



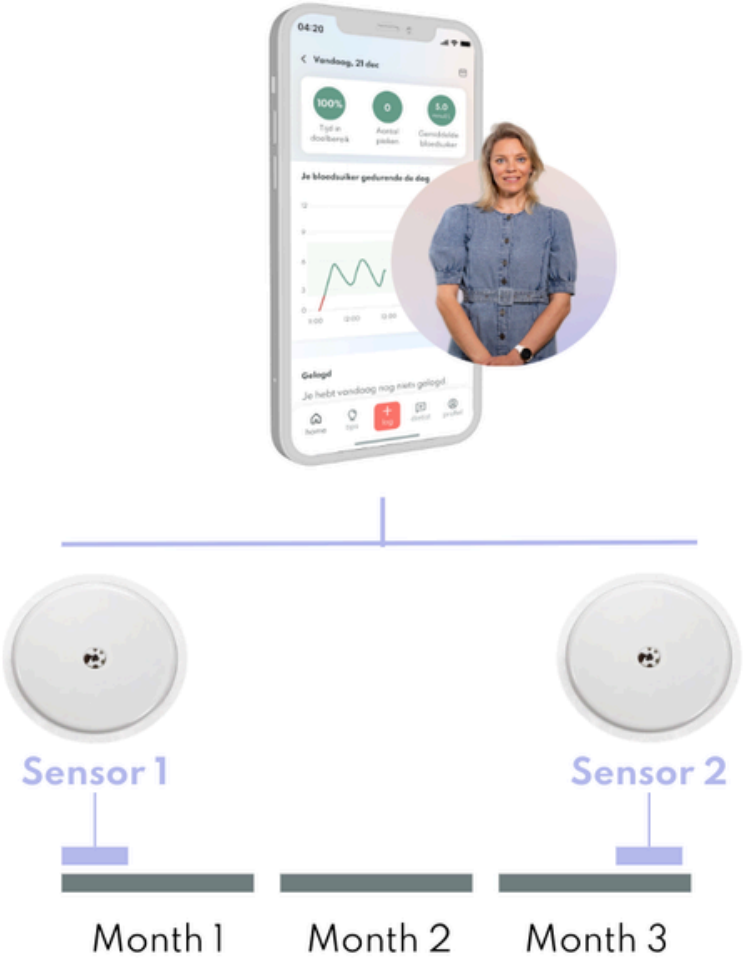
From Glucose Monitoring to Personalized Insights; How to Measure the Impact

Study design

A longitudinal observation study was performed to measure the effectiveness of personalised nutrition in people with T2DM.

Study population

In a joint campaign with Diabetesvereniging Nederland, individuals diagnosed with T2DM or at high risk for developing T2DM (elevated blood glucose and/or first-degree relatives with T2DM) were invited to participate in Clear.bio's digital nutritional intervention. Participation was completely voluntary, and there were no costs. Inclusion was only done for people who were diagnosed with (pre)T2DM by their GP, and/or people who had risk of T2DM based on GP assessments, and/or people who had a BMI>25 with cardiovascular risk or solely a BMI>30. Additionally, inclusion was only done for people who were motivated to change their lifestyle, had sufficient digital knowledge and were willing to share data and provide feedback. Exclusion from the study was done for people who were <18 years old, were diagnosed with type 1 diabetes mellitus, injected insulin 4 or more times a day, had chronic disease (other than T2DM), had comorbidities at the start of the treatment, or were pregnant.



Data collection

The study consisted of 2 consecutive phases. In **Phase I** (2022), participants initiated the normal 3-month Clear.bio intervention period. During these 3 months, participants progressed through several consecutive phases:

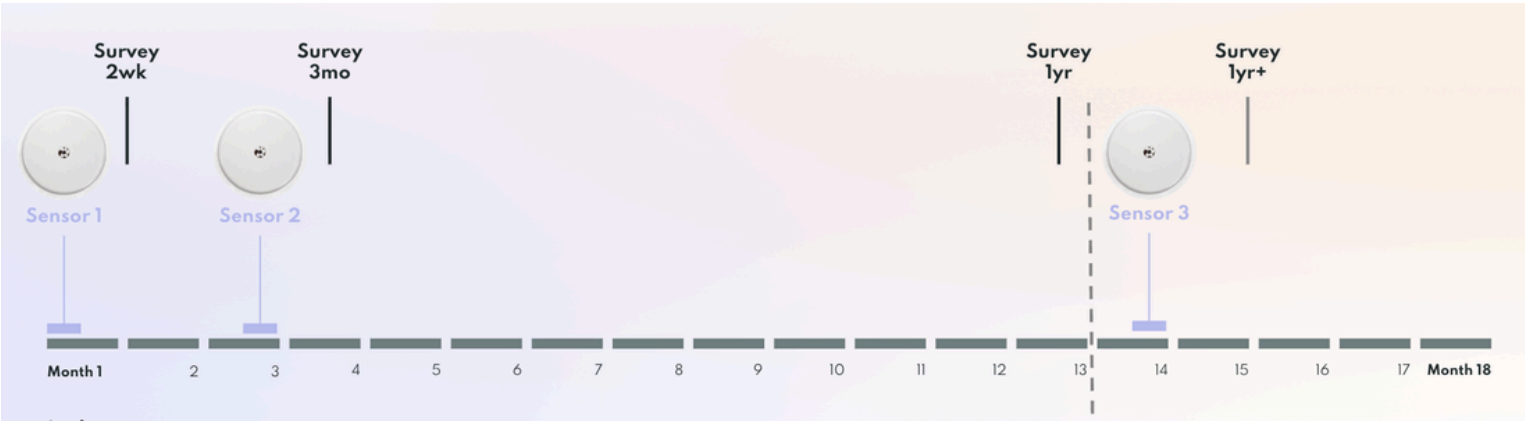
1. In the first 2 weeks of the intervention, participants started with their first continuous glucose monitoring (CGM) sensor period (sensor 1) and used the mobile Clear.bio application.
2. The second phase consisted of an 8-weeks intermediate period without CGM monitoring. Here, participants only used the Clear.bio application.
3. In the last 2 weeks of the intervention, participants completed a second CGM period (sensor 2) accompanied by the mobile Clear.bio application.

This picture indicates Phase I: first 3 months of the intervention.

In **Phase II** (2023), participants who completed Phase I were randomly selected to complete another 2-week CGM sensor period (sensor 3), 1 year after completing Phase I. This phase of the study gave insights in long-term effects of the 3-month Clear.bio intervention.

Additionally, participants filled out a questionnaire about their awareness of the impact of nutrition on their body, their perceived health, and their perceived control in week 2, 12, 48 and 52.

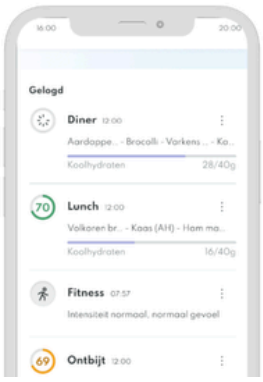
The picture below gives an overview of the total intervention timeline (Phase I and Phase II); indicating all 3 sensor periods and 4 questionnaire timepoints.



During all CGM sensor periods, participants collected real-time glucose data using a FreeStyleLibre2 sensor (Abbott), which measured the glucose levels in the interstitial fluids every 15 minutes. Additionally, participants logged all components of their meals in the mobile food diary of the Clear.bio application, resulting in a daily dietary overview. **By combining and analyzing both datasets (CGM and dietary intake) with a specifically developed algorithm, the glycemic response to each meal could be calculated.** This glycemic response was displayed to the participant in-app as a 'Food Score' ranging from 1 (poor) to 100 (excellent). Additionally, there were automated tips and nudges, and there was in-app coaching by certified dietitians to help participants adjust their meals accordingly. In this way, participants got a complete overview of their glycemic reaction to food, and received personalized tips to improve diet and glucose stability. In the intermediate 8 weeks where no CGM sensor was worn, participants could apply all provided dietary insights and recommendations in daily life.

Eat

Easily record your daily food and beverage intake.



Measure

Monitor your glucose levels in real-time for 2 weeks, using the CGM sensor.

Know

Receive personalized advice on which foods are and are not suitable for you.

Act

Change your diet to better regulate your blood glucose levels. Our dietitians are dedicated to support you!

Participant selection

A total of 215 participants were eligible to enter the study. From them, 173 had sufficient data from sensor 1, and 155 participants completed Phase I (sensor 1 & 2). Additionally, 77 participants responded to the 1+- follow-up survey, and among them, 30 individuals were randomly selected to participate in Phase II. Furthermore, 25 of these participants filled out an additional 1+-year about their awareness of nutrition, perceived health, and perceived control.

The First Pilar: Patient Experience

T2DM is one of the most common chronic conditions, usually developing as a result of long-term unhealthy eating and lifestyle habits combined with genetic predisposition. According to Dutch guidelines, patients diagnosed with T2DM are advised to adopt lifestyle changes alongside medication, aiming for an HbA1c ≤53 mmol/mol. **In practice, lifestyle advice is often difficult to interpret and apply, and medication addresses symptoms rather than the underlying cause of glucose dysregulation, frequently leading to higher doses over time.**

Healthy eating is increasingly important, but many patients struggle to make the right choices and adjust their diet. Interviews with T2DM patients also show that a diagnosis is often a shock. Many want to start changing their lifestyle immediately to avoid medication but are unsure how to do so effectively. They seek clear guidance, want control, and wish to begin at their own pace while accessing reliable advice. Yet, in the current care pathway, seeing a dietitian can take weeks, and follow-up appointments with a practice nurse are often scheduled only after three months, leaving patients uncertain and unassisted.

Using Clear.bio shortly after a T2DM diagnosis provides patients with immediate, tangible insight into how their blood glucose responds to daily choices. Rather than relying on abstract advice, patients can directly observe the effects of food, physical activity, and lifestyle adjustments, making their condition more understandable and manageable. For many, this experience is described as truly eye-opening, sometimes even confronting, but ultimately motivating.

''Thank you for the clarity, it has been very eye-opening. It has become painfully clear to me that I am in a problematic health situation. It is good to know this now; perhaps it is not too late yet. I hope that during the next sensor period I can improve my lifestyle even more, supported by your watchful guidance. Before the sensor, I lived quite carelessly, now I am active, both literally and figuratively. Thank you for your insights.''

The real-time visualisation strongly increases engagement and motivation. Patients report paying much closer attention to their diet and making more conscious decisions, as they can now clearly see the impact of their eating behaviour. What was once abstract becomes personal and actionable.

It is helpful to finally see the effect of my eating behaviour.

In addition, patients become more physically active and aware of how movement affects their glucose levels. Many personal discoveries deepen understanding and strengthen confidence in lifestyle

I noticed that during and after cycling, my glucose levels drop significantly, even though I ate shortly before in both cases. That is very interesting. I conclude that physical activity indeed lowers blood glucose levels.

Support from a certified dietitian, continuously available within the application, further enhances this process. Patients feel guided and supported in making changes, which contributes to a greater sense of control and accountability.

Thank you for all the explanations. I truly did not know this. I am learning something new again!

The Second Pilar: Health Outcomes

Outcomes on activation & motivation within 2 weeks

Analysis of the first 2 weeks of data show that around two-thirds of the participants logged meals daily, and over half were able to improve their Food Scores by applying personalized nutritional advice, making small adjustments to their daily eating routine. Two-week survey results indicate that 88% gained greater insights into their body's response to food, and 80% felt more capable of making healthy choices. **Both mainly driven by 'motivation by visualization' since real-time biofeedback turns passive decisions into active ones.** Overall, 72% of the Clear.bio users were activated and motivated within two weeks to apply their data-driven personalized advice and improve glucose levels.

* Measured for all participants of the study (n=215), based on data from frist CGM sensor.
**Results from a survey among participants two weeks after starting Clear.bio (n=152).
***Customer satisfaction (CSAT) measured following in-app interactions with the Clear.bio certified dietitians or technical support team.

Improvements in glucose levels after 12 weeks

A total of 155 participants completed Phase I, with data from 111 participants meeting the quality standards for clinical analysis. Participants were grouped based on mean baseline daily glucose: 1) well-controlled (< 6.0 mmol/L), 2) moderately-controlled (6.1-7.9 mmol/L), or 3) poorly-controlled (>8.0 mmol/L). Using data from the first and second sensors, clinical outcomes were assessed, including AG, FG, estimated (e)HbA1c, and TIR.

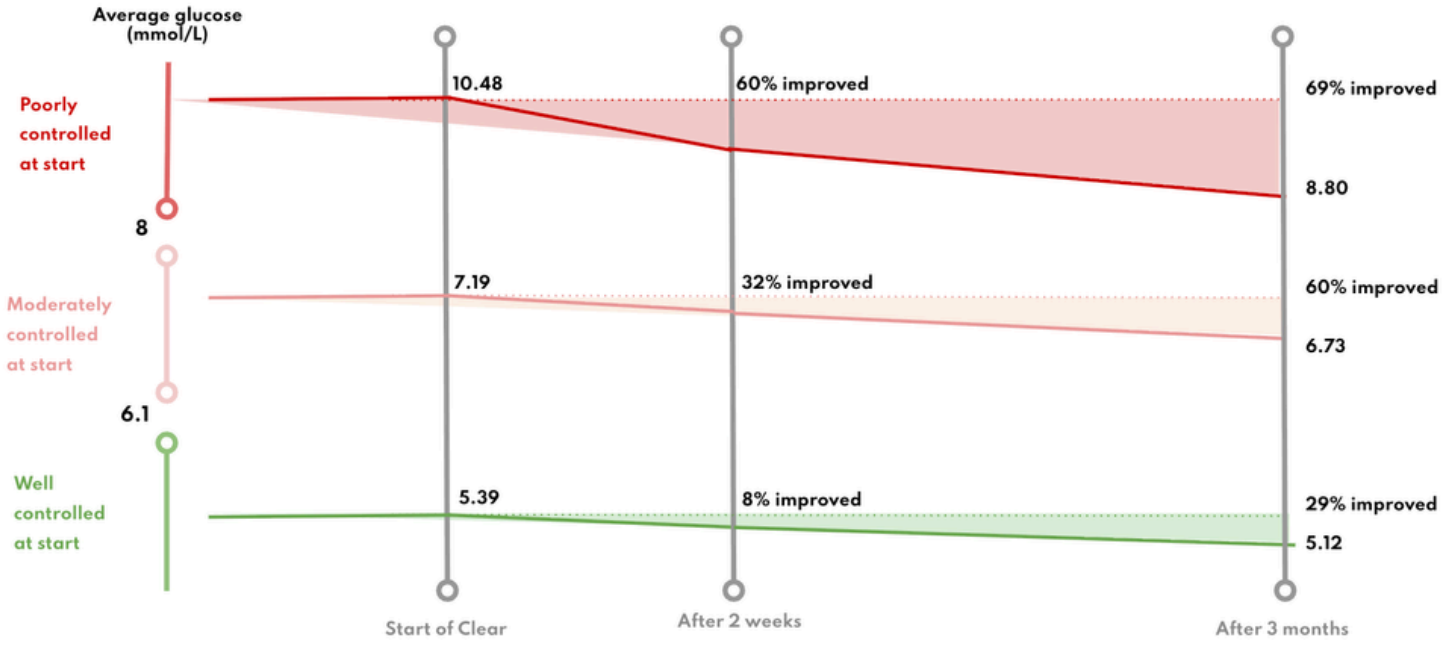
Over two-thirds of the T2DM participants (baseline glucose >8.0 mmol/L) reduced their AG with a mean of 1.69 mmol/L (mean eHbA1c reduction of 11.6 mmol/mol → 1.1%) and increased their TIR by 20%. Three-quarters of the T2DM participants also obtained reductions in FG levels (mean reduction of 1.54 mmol/L).

Measured for participants in the study who started with an average glucose >8 mmol/L; T2DM patients (n=80).
Results calculated from the average glucose values at the start and the end of the intervention.

Clear.bio Results: Majority of Diabetic Patients Lowers Average Glucose and Fasting Glucose in 3 Months

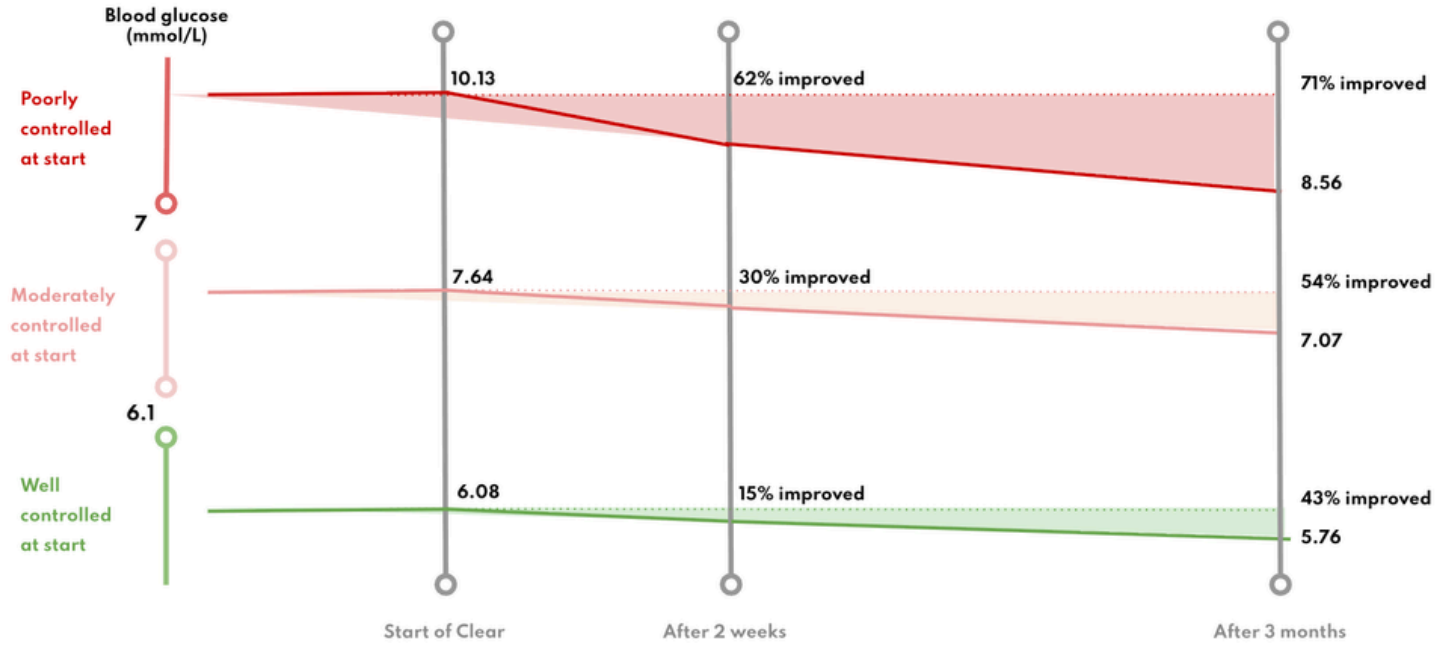
The graph below visualizes the improvement in **mean AG** (in mmol/L) of participants who finished Phase I. The results are classified into 3 groups, specified for glucose control levels at start (i.e., well-, moderately-, and poorly-controlled). These categories are based on mean AG in week 1.

The graph shows that the mean average glucose of all three categories has improved over the 3-month intervention. Moreover, from the poorly controlled participants at start, **69% improved their AG.**



The graph below visualizes the improvement in **mean FG** (in mmol/L) of participants who finished Phase I. The results are classified into 3 groups, specified for glucose control levels at start (i.e., well-, moderately-, and poorly-controlled). These categories are based on mean FG in week 1.

The graph shows that the mean FG of all three categories has improved over the 3-month intervention. Moreover, from the poorly controlled participants at start, **71% improved their FG.**



Results After 1 Year Follow-Up: Awareness and Control Are Increased in 100% of the Participants

Questionnaire outcomes after 1-year and 1 +-year

All 155 participants from Phase II received a 1-year follow-up questionnaire. 77 of them filled this form out, and 30 of them were randomly selected to start a third 2-week CGM sensor period. Additionally, 25 of these 30 participants also filled out the 1+-year questionnaire.

The 1-year and 1+-year questionnaires revealed that, at the end of the third 2-week CGM sensor period, 100% of the participants perceived more awareness about their nutritional choices and perceived more control over their health.

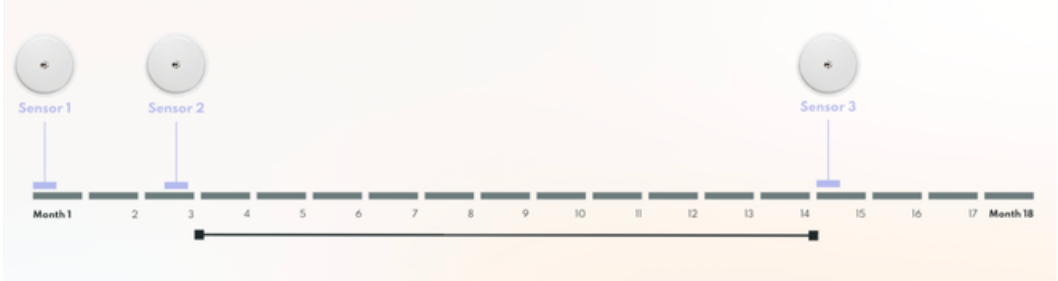
93%*	100%**	86%*	100%**
Awareness Insight into personal response to food in 1-year questionnaire	**Awareness** Insight into personal response to food in 1⁺-year questionnaire	**Control** Greater confidence in making healthy choices in 1-year questionnaire	**Control** Greater confidence in making healthy choices in 1⁺-year questionnaire

* Measured with questionnaire data from 77 participants.
** Measured with questionnaire data from 25 participants.

Improvements in glucose levels after 1-year

A total of 30 participants wore the CGM sensor for the third time, 1-year after completion of Phase I. Of them, 63% had a lower daily AG at the start of this third CGM sensor period when compared to the AG at the start of Phase I (mean reduction in daily AG: 1.52 mmol/L).

Additionally, 40% of the participants had a lower daily AG at the start of the third CGM sensor period when compared to the AG at the end of Phase I (mean reduction in daily AG 1.02 mmol/L)..



61% of the participants managed to further lower their AG levels when using a third CGM sensor period 1 year later. The mean reduction in daily AG was 2.24 mmol/L during this third sensor period of 2 weeks.

The Third Pilar: Clinician Experience

This study demonstrated that patients with T2DM are able to achieve significant improvements in glycemic control using Clear.bio's digital intervention.
However, **Clear.bio offers value beyond the individual patient.** Digitally personalised nutritional advice can be effectively integrated into a hybrid care pathway. Healthcare professionals, such as general practitioners (GPs), practice nurses, and dietitians can monitor their patients' data via the Clear.bio professional portal. This enables timely adjustments or interventions when needed, while also allowing professionals to confidently decide when a patient is managing well independently and a physical consultation is unnecessary.
The results of this study showed that patients were motivated to make lifestyle changes, became more aware of their patients' health, and engaged differently in consultations. Interviews revealed that GPs felt better equipped to optimize treatment through data insights, practice nurses could focus more deeply on personal circumstances, and dietitians value the rapid insight into adherence, enabling faster and more precise personalization. Healthcare professionals consistently report positive experiences with Clear.bio, highlighting the improved integration into care, greater patient engagement, and enhances personalization of treatment.

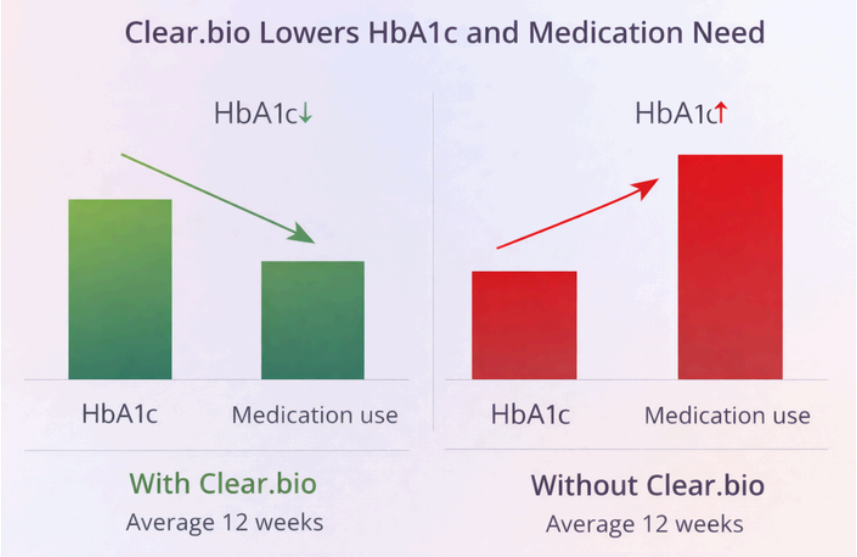
	Main pains in the current system	**Main gains** by using Clear.bio
General practitioner	• Limited consultation time restricts the ability of GPs to provide patients with comprehensive and individualized insights into diet and lifestyle. • Nutritional counseling often receives insufficient attention during consultations due to competing clinical properties.	• Real-time feedback enables to make more effective and sustainable dietary changes. • When nutritional counseling is delegated to Clear.bio dietitians, GPs are able to allocate more consultation time to other health-related issues.
Practice nurse	• A high number of missed appointments (no-shows) reduces the efficiency of care delivery. • Patients frequently perceive practice nurses as having limited authority or expertise in health-related decision-making.	• Patients demonstrate increased motivation and a clearer understanding of their glucose responses, resulting in more focussed and efficient consultations. • Better-informed consultations allow practice nurses to adjust medication more confidently and efficiently when appropriate. • Improved access to objective health data enhances patient trust in practice nurses.
Dietitian	• The costs associated with health technologies (e.g., CGM sensors) are often high and not reimbursed within standard care pathways. • Some patients attend only a single consultation, limiting opportunities for follow-up and long-term impact. • Patients frequently show limited acceptance of general nutritional advice.	• The systematic use of data enables more precise and actionable insights. • Patients can directly observe fluctuations in their glucose levels, reducing reliance solely on trust in the dietitian's recommendations. • Pre-logging of dietary intake significantly reduces administrative burden and saves time during consultations.

The Fourth Pilar: Healthcare System

Clear.bio also delivers a clear value at the healthcare system level. As highlighted in the introduction of this paper, digital and self-management treatment options are essential to ensure that healthcare systems remain accessible, high-quality, and affordable in the future.

Clear.bio has developed an innovative care concept for patients with T2DM that aligns closely with these objectives. By providing users with real-time insights into their metabolic health, Clear.bio empowers patients to act proactively in managing their condition, particularly through personalized nutritional choices, while remaining connected to their healthcare professionals through a digital care pathway.

Importantly, the clinical outcomes associated with Clear.bio demonstrate meaningful impact. HbA1c plays a central role as a key indicator for treatment intensity in T2DM. Rising HbA1c levels often lead to treatment intensification in clinical practice, such as increasing doses of existing medications or adding additional glucose-lowering drugs, including insulin. This not only increases the patient's medication burden but also raises costs for the healthcare system. Conversely, a sustained reduction in HbA1c can allow for medication to be safely reduced or even discontinued under professional supervision. By providing users with Clear.bio continuous insights into their glucose patterns and supporting sustainable lifestyle and nutritional adjustments, better glycemic control can be achieved. This often reduces the need for intensive pharmacological treatment.



Clear.bio Lowers the Medication Dependency
People who use Clear.bio lower their HbA1c in 12 weeks. Therefore, they can also lower their medication use.
In contrast, people who stay on standardized care have an increase in their HbA1c over time, which also increases their dependency on medication (8, 9).

The observed mean average reduction in HbA1c of 11.6 mmol/mol is strongly associated with a decreased need for glucose-lowering medication. Additionally, improved glycemic control contributes to a reduction in the risk of comorbidities and long-term complications related to T2DM, such as cardiovascular disease. Furthermore, by supporting early and sustained lifestyle interventions, Clear.bio may help prevent the progression to insulin dependency. Through better HbA1c management, Clear.bio demonstrably contributes to cost-efficient and sustainable diabetes care. **These influences on reduced medication use, fewer complications, and decreased healthcare utilization, result in an estimated reduction in total healthcare costs per T2DM patient of approximately 37%.**

By combining digital personalization with professional oversight, Clear.bio supports the delivery of high-quality, safe, accessible, scalable, and cost-effective diabetes care in a sustainable way; benefiting patients, providers, and the healthcare system as a whole.

From Short-Term Insight to Long-Term Impact: Real-World Effects of the Clear.bio

As mentioned in the introduction of this paper, projections indicate a 30% increase in the T2DM population by 2040 if no meaningful action is taken. This trajectory is not inevitable, but changing it requires a fundamental shift in how we approach glucose management, patient engagement, and long-term behavioral change. This 'EAT-MEASURE-KNOW' study demonstrated that Clear.bio's personalized nutrition intervention supported by CGM is not merely a short-term program, but a catalyst for sustainable metabolic improvement. The results show that a substantial proportion of the participants maintained improved glucose regulation one year after completing the active 12-week intervention. Among those who underwent a third CGM assessment, many achieved even lower average glucose levels compared to both the start and end of the program, with more than half continuing to further reduce their glucose levels over time. **These findings suggest that the intervention not only yields short-term benefits, but also supports lasting improvements in glucose management beyond the active intervention period.**

An important mechanism underlying these effects appears to be '**motivation through visualization**'. Real-time biofeedback on glucose responses to food provides patients with actionable insights, reinforcing learning and enabling rapid personalization of dietary choices. The added value of this approach is further supported by the observation that a short 'refresher' period using an additional sensor (two weeks) quickly leads to renewed insight and additional improvements, indicating that periodic reinforcement may be sufficient to sustain benefits over time.

From a clinical perspective, the short-term effects translate into meaningful long-term improvements. **Participants achieved an eHbA1c reduction of 11.6 mmol/mol and an increase in TIR of 20% within 12 weeks, which are clinically relevant outcomes associated with reduced risk of diabetes-related complications.** For healthcare professionals, the use of Clear.bio supports more efficient consultations and higher-quality conversations, as patients are better informed, more motivated, and more capable of self-management. This enables delivery of 'the right care, at the right time, in the right place', freeing up capacity for patients requiring more intensive support.

From a health-economic perspective, improved glucose control is expected to reduce medication use, diabetes-related risk factors, co-morbidities, and associated costs. The cost reduction that is caused by this underscores the potential of personalised nutrition supported by CGM as a cost-effective intervention. When prescribed to motivated, poorly-regulated T2DM patients aiming to reduce or avoid medication, Clear.bio could generate substantial system-wide savings.

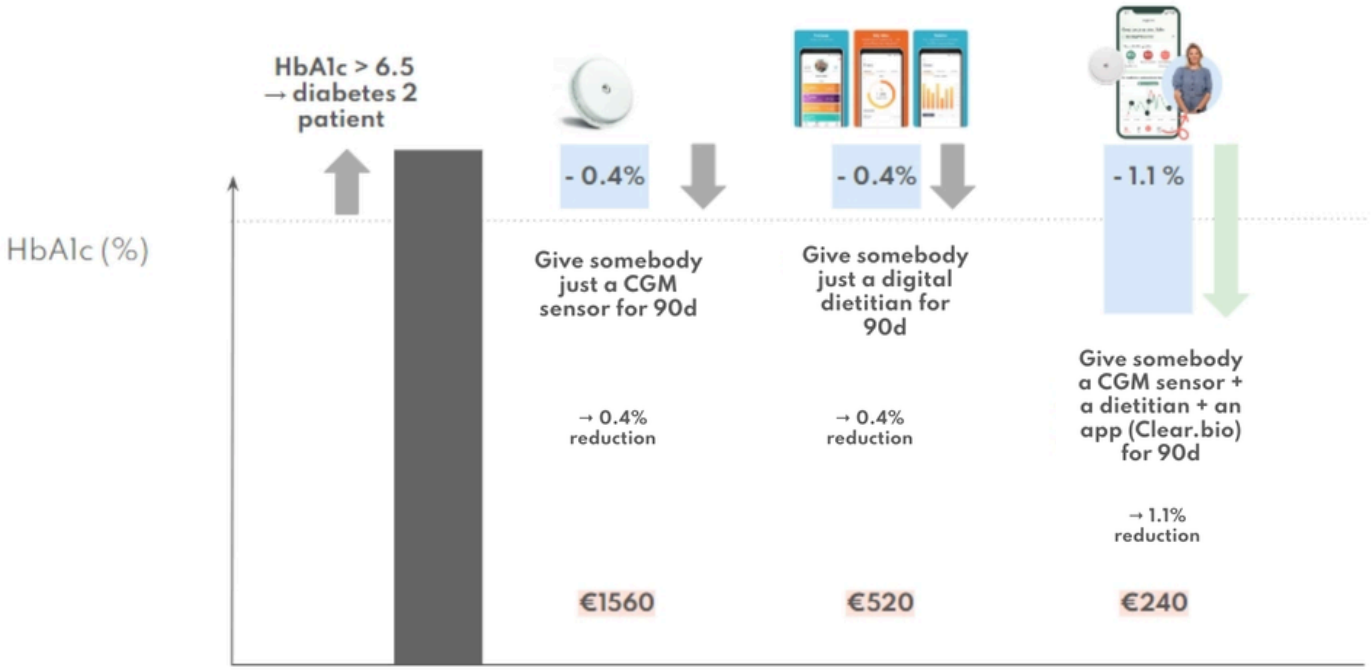
Overall, these data support the conclusion that **motivation through visualization** combined with personalized nutritional guidance, empowers patients to take control of their health, supports diabetes remission, and delivers clinical, economic, and societal value. The use of real-world data in this study makes the outcomes highly usable for implementation, as they reflect everyday clinical practice and user behavior rather than controlled experimental conditions. Given the growing burden of T2DM and urgent need for scalable, sustainable solutions, these findings call for broader adoption of personalized, CGM-supported intervention such as Clear.bio within routine care pathways. Healthcare providers, policymakers, and insurances are encouraged to actively explore and integrate such approaches to improve patient outcomes while ensuring long-term healthcare system sustainability.

Competitor landscape

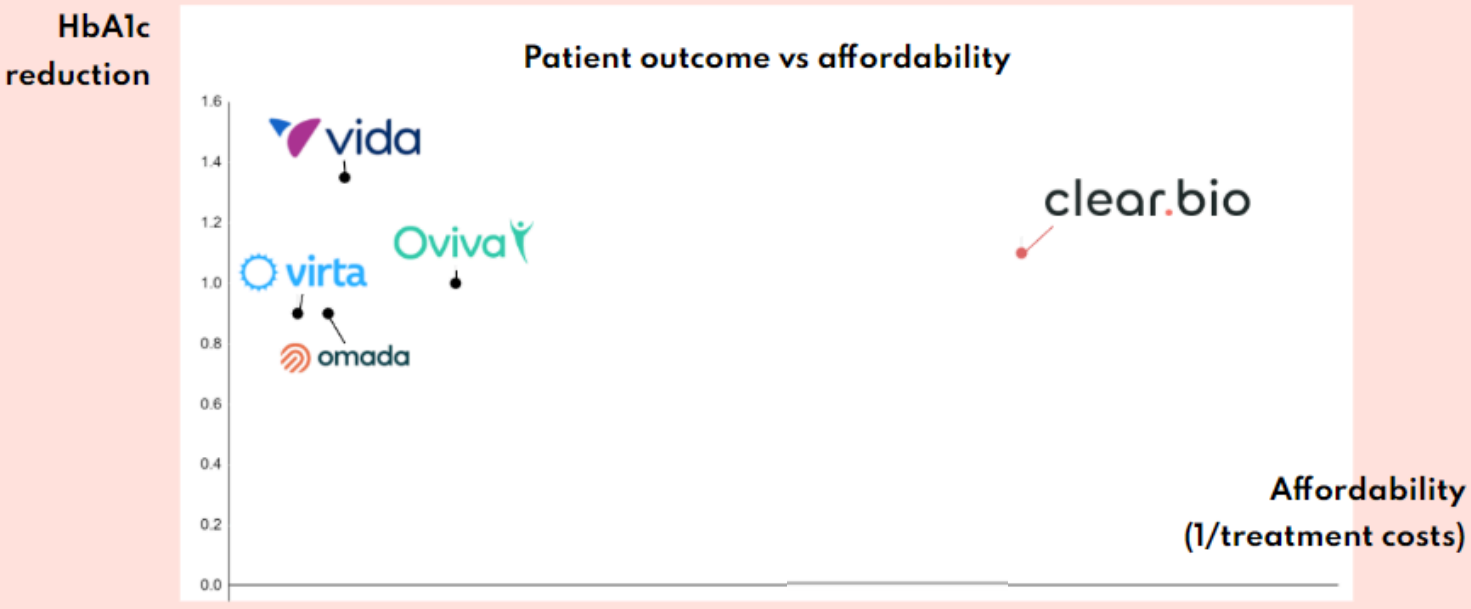
Treatment approaches for T2DM vary widely in methodology, intensity, and primary outcomes. The competitive landscape for digital lifestyle interventions in T2DM can be broadly divided into:

1. Glucometry/monitoring apps that visualize glucose data but do not guide decisions.
2. Digital dietitian programs providing nutrition advice, with or without static biomarker data.
3. Digital therapeutics using real-time glucose data from CGMs, combined with structured coaching.

The picture below compares all three treatment options to each other in terms of HbA1c reduction and costs. In this graph, we can see that Clear.bio, which is a digital therapeutic using real-time glucose data from CGMs combined with coaching, obtains the highest HbA1c reduction for the lowest costs.



However, Clear.bio's primary competitors fall into the last category (digital therapeutics using real-time glucose data from CGMs in combination with coaching), with notable examples including Omoda health, Virta Health, Vida health, and Oviva health. Therefore, the below given competitor landscape compares HbA1c reduction to costs specifically for those interventions.



What is next?

Building on the results presented in this paper, Clear.bio's ambition is to further scale its impact across both populations and healthcare systems. Our current focus is to expand access to the intervention internationally. Currently, we are actively working on implementation projects in France, Germany, Portugal, the United States of America, and Kenya. These initiatives allow us to validate the scalability of our approach across diverse healthcare infrastructures, reimbursement models, and patient populations.

In parallel we are investigating the possibility to apply our methodology beyond T2DM. We are exploring the effect of our treatment on diseases directly linked to T2DM, such as cardiovascular diseases and obesity. By applying the same approach, we aim to support patients in their weight regulation, blood pressure, and overall metabolic resilience.

Another important area of focus is prevention. Given the growing global prevalence of pre-diabetes, we see a strong potential for early intervention. As Clear.bio is designed to support remission in T2DM, supporting individuals before onset of overt disease may help prevent progression to T2DM. Thereby, the long-term burden on both patients and healthcare systems is reduced.

At the same time, we continue with further strenghtening the product itself. This includes continuously improving the user experience and expanding personalization algorithms. By connecting nutritional insights more directly to daily food choices, for instance through retailers or meal providers, we aim to further lower barriers to sustainable behavior change and enhance long-term adherence.

Ultimately, our goal is to create a scalable, evidence-based digital therapeutic that can support metabolic health across the full continuum of care: from prevention to treatment to long term disease management. **If you are interested in collaborating, implementing or learning more about our latest results and ongoing developments, we welcome you to get in touch and explore opportunities together.**

Acknowledgements

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References

1. Genitsaridi, Irini, Paraskevi Salpea, Agus Salim, et al. 2026. “11th Edition of the IDF Diabetes Atlas: Global, Regional, and National Diabetes Prevalence Estimates for 2024 and Projections for 2050.” The Lancet Diabetes & Endocrinology 14 (2): 149–56. https://doi.org/10.1016/S2213-8587(25)00299-2.

2. Lu, Xi, Qingxing Xie, Xiaohui Pan, et al. 2024. “Type 2 Diabetes Mellitus in Adults: Pathogenesis, Prevention and Therapy.” Signal Transduction and Targeted Therapy 9 (1): 262. https://doi.org/10.1038/s41392-024-01951-9.

3. Zeevi, David, Tal Korem, Niv Zmora, et al. 2015. “Personalized Nutrition by Prediction of Glycemic Responses.” Cell 163 (5): 1079–94. https://doi.org/10.1016/j.cell.2015.11.001.

4. Roche. “New Survey Reveals Growing Healthcare Concerns in Europe.” Roche.Com, June 6, 2025. https://www.roche.com/stories/research-healthcare-aging-europe.

5. Diabetes Fonds. “Diabetes in Cijfers.” Diabetesfonds.Nl, n.d. https://www.diabetesfonds.nl/over-diabetes/wat-is-diabetes/diabetes-in-cijfers?gad_source=1&gad_campaignid=267098891&gbraid=0AAAAAD-CdPV1k7Bi3XZk3HjF2kDJb2xbC&gclid=Cj0KCQiAsNPKBhCqARIsACm01fQQxndLMMhOd0d3aWETOiOO6l0bXZu1zkGcBEqrG2FAMzRgzl7Lv-YaAsf_EALw_wcB.

6. Blokland, Robbert. Nederland Wil Bewuster Eten: Diëtisten Kunnen Vraag Naar Advies Nauwelijks Aan. 2023. https://www.nu.nl/gezondheid/6247388/nederland-wil-bewuster-eten-dietisten-kunnen-vraag-naar-advies-nauwelijks-aan.html?referrer=https%3A%2F%2Fdocs.google.com%2F.

7. Ministerie van Volksgezondheid, Welzijn, en Sport. “Integraal Zorg Akkoord.” Rijksoverheid, 2022. https://www.rijksoverheid.nl/documenten/rapporten/2022/09/16/integraal-zorgakkoord-samen-werken-aan-gezonde-zorg.

8. Kahn, Steven E., Steven M. Haffner, Mark A. Heise, et al. “Glycemic Durability of Rosiglitazone, Metformin, or Glyburide Monotherapy.” New England Journal of Medicine 355, no. 23 (2006): 2427–43. https://doi.org/10.1056/NEJMoa066224.

9. UK Prospective Diabetes Study Group. “Intensive Blood-Glucose Control with Sulphonylureas or Insulin Compared with Conventional Treatment and Risk of Complications in Patients with Type 2 Diabetes (UKPDS 33).” The Lancet 352, no. 9131 (1998): 837–53. https://doi.org/10.1016/S0140-6736(98)07019-6.