FROM DETECTION TO CURE

Transforming Lives for People Living with Diabetes

Insights from the 2025 IDF Europe Expert Day

International Diabetes Federation
Europe

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INTRODUCTION

Diabetes has become so commonplace in our societies that it is often accepted as an unavoidable, life-long condition – something to be managed rather than questioned. This deeply ingrained perspective, shaped by decades of experience, no longer reflects what is possible. **Diabetes prevention and care are now on the cusp of a revolution**. In the past few years, progress in understanding, treating and potentially curing diabetes has accelerated, with **transformative innovations** emerging **across the spectrum of prevention and care**. New technologies for self-management, advanced digital tools for healthcare professionals (HCPs) and artificial intelligence (AI) are reshaping how diabetes can be prevented, monitored and managed. At the same time, emerging evidence shows that remission of type 2 diabetes (T2D) is possible through a range of interventions. Understanding of the mechanisms linking diabetes to other chronic conditions is also improving, while new therapies have emerged that can delay type 1 diabetes (T1D) progression; and progress towards a functional cure for T1D is accelerating.

Yet, despite this extraordinary scientific momentum, health outcomes resulting from real-world care for people living with diabetes (PwD) in Europe are still not reaching their full potential. Many people face delayed diagnosis or do not achieve their treatment targets. Access to the latest innovations remains uneven. **The gap between what science now makes possible and what PwD actually experience in their routine care represents a missed opportunity** to lower the risk of complications, improve quality of life and transform life with diabetes.

To address this gap, IDF Europe is striving to transform the lives of PwD, from early detection to cure, by advocating for innovative and equitable diabetes prevention and care. As part of this commitment, **IDF Europe** convened an **Expert Day** in December 2025, bringing together PwD, HCPs, researchers and policymakers to discuss the latest evidence in diabetes care and explore areas with transformative potential, including **preventing and achieving remission of T2D, addressing diabetes as a driver of other chronic conditions and accelerating progress towards a cure for T1D.**

Realising these opportunities will require coordinated policies, equitable access, sustained research investment and integrated, person-centred care to ensure that scientific breakthroughs translate into meaningful improvements in the lives of millions of Europeans living with diabetes.

This report summarises the key insights and calls to action emerging from IDF Europe's Expert Day. It builds on the evidence presented by experts during the event, as well as on the discussions and perspectives shared by participants, to inform EU and national policy decisions that can shape diabetes prevention and care.

A detailed programme of the event and links to the presentations are provided in **Appendix 1**.

KEY TAKEAWAYS

RETHINKING T2D CARE

T2D IS NOT INEVITABLY PROGRESSIVE: PREVENTION, REMISSION AND COMPLICATION REDUCTION ARE REALISTIC GOALS FOR SOME PEOPLE

Long-standing models of T2D care have focused on treatment escalation to manage the condition. However, growing evidence shows that **T2D progression can be prevented and remission achieved in some individuals** through lifestyle, newer pharmacological and/or surgical interventions notably promoting weight loss – particularly when applied early and tailored to individual needs. This challenges the perception of T2D as an unavoidably lifelong, worsening condition and reframes prevention, remission and complication reduction as achievable outcomes of care.

REMISSION IS A DYNAMIC STATE THAT REQUIRES SUSTAINED MONITORING AND TAILORED CARE

Achieving remission does not eliminate future risks. **People who achieve remission remain at risk of relapse and diabetes-related complications**, including cardiovascular, kidney and liver diseases, particularly when routine monitoring or preventive therapies are reduced. Remission should therefore be embedded within **long-term, structured care pathways** that include continued risk assessment, monitoring and timely intervention.

EARLY DETECTION OF DYSGLYCAEMIA IS CRITICAL TO MAXIMISING PREVENTION, REMISSION AND LONG-TERM OUTCOMES

The likelihood of achieving remission and lowering the risk of complications is highest when intervention occurs early in the disease course. Yet, many people are diagnosed only once complications have developed. **Earlier identification of dysglycaemia**, even before overt diabetes, creates a window of opportunity for timely, personalised intervention that **can alter disease trajectories and reduce long-term burden**, including the risk of developing complications. To fully realise this opportunity, people also need timely access to new therapies that not only improve glycaemic control but provide multi-organ protection.

CONTINUOUS GLUCOSE MONITORING OFFERS NEW OPPORTUNITIES FOR EARLIER INTERVENTION AND PERSONALISED CARE

Continuous glucose monitors (CGMs) can detect glycaemic abnormalities that are missed by point-in-time testing and provide insights to support behavioural change, self-management and clinical decision-making. Emerging evidence also suggests that CGM metrics may signal early risk for complications beyond glycaemia. However, they remain underused due to cost, data interpretation challenges and limited integration into primary care.

EQUITY AND PERSON-CENTRICITY MUST BE CENTRAL TO PREVENTION AND REMISSION STRATEGIES

Socioeconomic disadvantage shapes both the risk of developing T2D and the likelihood of not benefiting from remission-focused interventions. **Without targeted action, prevention and remission programmes may widen existing inequalities in health outcomes.** Prevention and remission must therefore be pursued as population-level goals grounded in fairness, accessibility and inclusion, and implemented through person-centred approaches that meaningfully engage and empower individuals to be full partners in their own care.

HEALTH SYSTEM TRANSFORMATION IS ESSENTIAL TO TRANSLATE EVIDENCE INTO ROUTINE CARE

Despite strong evidence, most diabetes care pathways remain oriented towards long-term disease management rather than early intervention, remission and sustained risk reduction. **Clear definitions of remission, integrated care models, aligned reimbursement, workforce capacity and coordinated multidisciplinary care** are required to close the gap between scientific progress and everyday clinical practice.

KEY TAKEAWAYS

TOWARDS A CURE FOR T1D

T1D REMAINS A GROWING AND LIFE-ALTERING CONDITION DESPITE A CENTURY OF PROGRESS

Advances in insulin therapy, delivery systems and glucose monitoring have transformed T1D management and care, yet **the condition continues to impose a substantial burden on PwD and their families**. Incidence is rising, misdiagnosis remains common in adults and late diagnosis continues to expose individuals, particularly children, to life-threatening diabetes ketoacidosis (DKA).

EARLIER IDENTIFICATION OF T1D IS NOW POSSIBLE AND CHANGES THE CARE PARADIGM

Through T1D disease staging and the availability of autoantibody screening **it possible to identify individuals before clinical onset**. Earlier identification reduces the risk of DKA at diagnosis, allows individuals and their families time to prepare and enables timely access to care, education, psychosocial support and clinical trials. However, **screening only delivers benefit when embedded within structured, supportive follow-up pathways**.

DISEASE-MODIFYING THERAPIES ARE SHIFTING T1D CARE FROM REACTIVE TO PROACTIVE INTERVENTION

New **therapies that delay progression to insulin-dependent T1D** represent a major shift in how the disease is approached, **targeting the autoimmune process rather than responding only after beta-cell loss has occurred**. These therapies have the potential to reduce long-term complications and improve quality of life, provided access is timely, equitable and supported by robust care pathways.

A FUNCTIONAL CURE IS INCREASINGLY PLAUSIBLE THROUGH CELL AND GENE THERAPIES

Beta-cell replacement strategies, including pancreas and ISLET transplantation, and other beta cell replacement approaches, **offer promising routes towards restoring endogenous insulin production**. Early clinical results are encouraging, **but significant challenges remain** related to durability, immune protection, safety, scalability, cost, regulation and equitable access.

PROGRESS TOWARDS A CURE REQUIRES SUSTAINED RESEARCH, COLLABORATION AND SYSTEM READINESS

Advancing from experimental success to real-world impact will require coordinated investment in research, cross-disciplinary collaboration, regulatory alignment and manufacturing innovation. Equally important is the **meaningful involvement of people living with T1D** and their carers to ensure emerging therapies are acceptable, person-centred and deliverable at scale.

RETHINKING T2D CARE

T2D has traditionally been conceptualised and treated as an inevitably progressive chronic condition. Early management focuses on lifestyle interventions such as dietary change and physical activity. According to clinical guidelines, pharmacological treatment typically begins with metformin, followed by the addition of other oral agents (such as sulfonylureas and DPP-4 inhibitors) when glycaemic control does not improve, and eventually insulin for a subset of people. In certain cases, bariatric surgery is also considered, for some people with severe obesity. Overall, these approaches aim at controlling blood glucose and preventing or delaying complications, within a model that relies on escalating treatment over time.

Evidence from the **GRADE study** (Glycemia Reduction Approaches in T2D) illustrates the limitations of this traditional treatment paradigm. In this large, long-term trial of people with relatively recent-onset T2D treated with metformin plus one additional standard therapy, **around 70% of participants were unable to maintain target glycaemic control over approximately five years, despite ongoing treatment** [1]. This finding reflects the difficulty of achieving durable disease control using conventional glucose-lowering strategies alone and helps explain why T2D has long been viewed as a progressively worsening condition.

Regardless of the specific intervention pathway, achieving optimal health outcomes also relies on structured self-management education and ongoing support. Empowering PwD with the knowledge, skills and confidence to manage their condition is essential to achieving and maintaining improvements over time.

This reactive approach has broader consequences beyond glycaemic control. **Diabetes** is not a stand-alone condition – it **is the root cause of many other chronic conditions** like cardiovascular disease (CVD), kidney and liver disease, retinopathy, neuropathy and a range of other complications [2]. **Failure to manage blood glucose also increases the burden of diabetes and heightens the risk of complications.**

Approximately **one in three PwD develop CVD** [3] and PwD have a two- to three-fold higher CVD risk than individuals without diabetes [4], making it a leading cause of premature mortality. Atherosclerosis and CVD risk and burden are often accelerated by mechanisms such as insulin resistance, dyslipidaemia, obesity and inflammation, which frequently co-occur in people living with T2D.

Diabetes is also closely linked to chronic kidney disease (CKD), which acts as a major multiplier of morbidity and premature mortality in PwD [5]. Globally, **diabetes remains a leading cause of CKD, accounting for a substantial proportion of individuals requiring dialysis or kidney transplantation.** Registry data show that diabetes is the most common underlying condition among people requiring kidney replacement therapy in Europe [6].

In addition, **diabetes is strongly associated with metabolic dysfunction-associated steatotic liver disease (MASLD)**, a condition characterised by excess hepatic fat accumulation driven by metabolic, genetic and environmental factors. MASLD can progress to metabolic dysfunction-associated steatohepatitis (MASH), involving liver inflammation and cell damage, which can lead to scarring (fibrosis) and cirrhosis, liver failure and cancer. PwD experience a markedly increased risk of adverse liver-related outcomes, and when diabetes and MASLD coexist, CVD risk is further amplified [7].

LIFESTYLE, PHARMACOLOGICAL AND SURGICAL INTERVENTIONS CAN PREVENT T2D PROGRESSION OR INDUCE REMISSION WHEN TAILORED TO INDIVIDUAL NEEDS

Today, **emerging evidence shows that various intervention pathways** – including new therapeutic options such as GLP-1-based therapies and SGLT2 inhibitors, lifestyle intervention and bariatric surgery – **when delivered through more personalised models of care, can in some cases help prevent T2D or enable remission, while also reducing the risk of complications**. This approach places greater emphasis on addressing underlying disease drivers and tailoring treatment combinations and support to individual needs.

Lifestyle interventions

Evidence from clinical trials illustrates that structured lifestyle interventions can lead to T2D remission particularly when implemented early in the disease course. For example, in the DiRECT trial, nearly half of participants achieved remission following a structured, **very low-energy diet**, with about 13% maintaining remission at five years [8]. Similarly, the Look AHEAD study showed that intensive **lifestyle modification**, including calorie reduction, increased physical activity and behavioural support, significantly increased early remission rates compared with standard care, though the effect gradually declined over time [9]. These findings demonstrate that **weight loss and lifestyle change can in some cases be effective for inducing remission, with downstream benefits for complications such as CVD, CKD and MASLD**.

Therapeutic interventions

In addition to lifestyle-based strategies, **some therapeutic interventions can also induce T2D remission**, particularly when applied early in the disease course, **and their benefits may extend** beyond glycaemic control **to the reduction of diabetes-related complications**.

A systematic review and meta-analysis on **short-term intensive insulin therapy** found that a brief period of intensive insulin treatment in newly diagnosed PwD could lead to prolonged periods of medication-free glycaemic control accompanied by improvements in beta-cell function and insulin sensitivity, indicating potential modification of underlying disease mechanisms rather than short-term glucose lowering alone [10].

More recently, newer pharmacological therapies, including **GLP-1–based therapies** (including improved GLP-1 receptor agonists and new dual GIP/GLP-1 receptor agonists), have demonstrated substantial benefits for PwD. In trials involving adults living with T2D and overweight or obesity, once-weekly treatments produced significant **improvements in glycaemic control** and **substantial weight loss**, with the dual GIP/GLP-1 receptor agonist tirzepatide achieving average weight reductions of about 13–15% over 72 weeks in the SURMOUNT-2 trial [11] and the GLP-1 receptor agonist semaglutide achieving about 9.6% weight loss over 68 weeks in the STEP 2 trial [12]. While remission was not directly assessed, these metabolic improvements are consistent with mechanisms associated with remission, including both improved insulin sensitivity and beta-cell function.

Emerging evidence indicates that **these newer diabetes therapies also reduce the risk of major diabetes-related complications**, extending their impact beyond glycaemic control. GLP-1 receptor agonists have been shown to significantly reduce major adverse cardiovascular events and cardiovascular mortality [13]. Evidence from a semaglutide trial further suggests that its **cardiovascular benefits** are largely independent of initial body weight and weight loss [14], pointing to broader cardiometabolic mechanisms. At the same time, SGLT2 inhibitors [15] and GLP-1–receptor agonists [16] have demonstrated clinically meaningful benefits for **kidney health**, including slowing the progression of CKD and reducing the risk of major kidney outcomes in people with T2D. In addition, growing evidence suggests that GLP-1-based therapies may also have benefits for **liver health**, highlighting their potential role in helping to prevent or delay the progression of liver complications that frequently co-occur with T2D [17]. Together, these effects suggest that **modern diabetes therapies can simultaneously target multiple complications and reduce long-term disease burden by addressing shared underlying mechanisms** such as insulin resistance, inflammation, dyslipidaemia and organ-specific metabolic stress, rather than glucose levels alone. However, further research is required to define their role in preventing disease progression across diabetes-related complications as well as to understand their impact when combined with other interventions.

Bariatric surgery

Bariatric surgery also provides strong evidence that **T2D remission** is **achievable in a substantial proportion of eligible individuals**, particularly when intervention occurs early. In the Swedish Obese Subjects study (SOS), approximately 72% of participants living with T2D were in remission two years after surgery, compared with about 16% in the standard-care control group. At 15 years, around 30% of those who had surgery remained in remission, while remission in the control group remained low (around 6.5%) [18]. Beyond glycaemic outcomes, bariatric surgery was also associated with **lower rates of long-term microvascular and macrovascular complications**, indicating that remission-oriented interventions can contribute to sustained reductions in overall disease burden.

Alongside studies evaluating individual intervention types, there is also evidence examining how combinations of these approaches perform in practice. Results from randomised trials further indicates that **T2D remission is achievable for some PwD through multimodal interventions**. A systematic review and meta-analysis of nonsurgical randomised controlled trials found that structured, multimodal interventions – including combinations of dietary strategies, physical activity, behavioural support and pharmacotherapy – significantly increased the likelihood of remission compared with usual care [19], particularly among people with more recent diagnoses.

Realising the full potential of these strategies requires a fundamental shift in how T2D is approached – moving beyond a sole focus on long-term management of progression and towards integrating prevention, remission and the reduction of complications as realistic and explicit goals of care.

Evidence shows that **remission is achievable for some people through different interventions**, or combinations thereof, **particularly when care is personalised** in alignment with individual characteristics and preferences, **and initiated early**. In this context, ensuring timely and equitable access to newer pharmacological therapies is essential to enable personalised and early treatment strategies and to maximise the potential for remission and complication reduction. At the same time, not all interventions are suitable or feasible for every person living with T2D, underscoring the need for case-by-case decision-making within flexible, person-centred care pathways that can adapt over time.

SUSTAINING REMISSION REQUIRES LONG-TERM ONGOING, TAILORED SUPPORT

Across all intervention types, **sustaining remission over the long term remains challenging**. Evidence from lifestyle, pharmacological and surgical studies reported above consistently shows that **initial improvements may diminish over time**.

Remission should not be viewed as a one-time outcome, but as a dynamic clinical state that requires ongoing monitoring, structured follow-up and tailored support to maintain benefits and maximise long-term health outcomes.

Real-world evidence highlights the **risks associated with reduced follow-up after remission**. Analysis of the National Diabetes Audit for England and Wales found that people formally coded as being in remission were significantly less likely to receive recommended annual care processes – including monitoring of HbA1c, blood pressure, kidney function, body mass index, smoking status and foot health – compared with those without a remission code [20]. Those with a remission code were about 30% less likely to receive all recommended care processes, while those with evidence of remission but no formal code were only modestly less likely to receive care. This suggests that **formal recognition of remission may inadvertently lead to reduced monitoring and delay the detection of emerging complications**, potentially driven by assumptions that routine checks are no longer necessary.

Importantly, **even after remission, people living with T2D remain at risk of complications**. A Danish registry study of individuals with newly diagnosed T2D showed that those achieving early remission continued to face a measurable risk of major cardiovascular events over five years [21]. Much of this residual risk was associated with lower use of preventive therapies, compared with individuals who remained on treatment but had well-controlled diabetes. These findings underscore that **while T2D remission is achievable, underlying risks** – including those for diabetes-related complications – **may persist and require continued preventive management**.

This evidence shows that insufficient follow-up after remission may compromise both durability of remission and protection against long-term complications. **Sustaining remission** therefore **requires structured, long-term care pathways that are tailored to the individual, maintain routine monitoring and risk assessment, and ensure access to preventive therapies**. Through clear, staged care pathways, continued follow-up can help identify individuals at higher risk and enable timely, personalised interventions to prevent, delay or slow the progression of complications. Embedding remission within a framework of **continuous person-centred follow-up** is essential to **avoid false reassurance** and to **translate short-term improvements into lasting health benefits**.

EARLY DETECTION OF DYSGLYCAEMIA AND TIMELY INTERVENTION ARE KEY TO HELP PREVENT T2D PROGRESSION AND ITS COMPLICATIONS, AND INDUCE REMISSION

Evidence from across the studies reviewed in this document consistently indicates that **earlier intervention is a critical determinant of success**, both for preventing disease progression and complications, and for achieving remission. **Dysglycaemia** – characterised by abnormal blood glucose levels, as opposed to normoglycaemia – **has been shown to be harmful even in individuals without diabetes** [22]. Even modest elevations in blood glucose are associated with a measurable increase in risk for adverse health outcomes, including coronary heart disease [23], CKD and heart failure, with risk rising progressively across the glycaemic spectrum, even below the threshold for diabetes [24]. Subsequently, **lowering glucose levels early can deliver long-term health benefits**.

Multiple intervention studies show that **remission is more likely in people with shorter diabetes duration and lower baseline glycaemia**. In the DiRECT [2] and Look AHEAD trials [3], remission was most commonly observed early after diagnosis, while remission rates declined as disease duration increased. Similarly, remission following short-term intensive insulin therapy was most evident in newly diagnosed individuals, suggesting that early restoration of glycaemic control may help preserve beta-cell function and improve insulin sensitivity [4]. Bariatric surgery studies also consistently show that shorter diabetes duration is a key predictor of both achieving and sustaining remission [8].

These findings are reinforced by real-world evidence. A population-based study from Scotland found that remission was more frequent among people with more favourable metabolic profiles, including lower baseline glycaemia, and noted that evidence from intervention studies consistently links earlier disease stage with a higher likelihood of remission [25]. Together, these data suggest that **the window of opportunity for remission narrows as T2D progresses**, underscoring the importance of early detection and timely action.

Early detection remains a significant challenge in practice. Many people living with T2D are undiagnosed [26] **or are only diagnosed after complications have already developed** [27]**. Delayed diagnosis means that individuals often enter care at a more advanced stage of disease, when opportunities for prevention or remission are more limited and the risk of long-term complications is already elevated.**

This evidence highlights early detection of dysglycaemia as a key element of effective prevention, remission and complication reduction. **Screening strategies, early diagnosis and timely access to appropriate, personalised interventions are** therefore **essential components of an effective T2D care model** – one that seeks not only to manage established disease, but to intervene early, protect health and maximise long-term outcomes. Importantly, **screening programmes should also consider shared risk factors underlying T2D and its complications**, including CVD, CKD and MASLD. Early interventions should be designed to both prevent or achieve T2D remission and prevent or delay the progression of complications.

CGMs CAN ENABLE EARLIER DETECTION OF DYSGLYCAEMIA AND PROVIDE INSIGHTS THAT SUPPORT BEHAVIOURAL CHANGE AND CLINICAL DECISION-MAKING

Early detection of dysglycaemia remains challenging, as it often develops without clear or noticeable symptoms. In this context, **continuous glucose monitors (CGMs) have the potential to play a key role in identifying it at an earlier stage**. Compared to traditional point-in-time tests or HbA1c measurements, CGMs offer a more granular view of glucose patterns, **enabling earlier identification of deviations from normal glycaemia**. For example, a study on intrapersonal variability in fasting glucose used CGMs to track day-to-day fluctuations in adults without diabetes and found that individuals could experience significant variability in fasting glucose that would not be captured by single, point-in-time measurements [28]. These subtle fluctuations were associated with early signs of dysglycaemia, suggesting that CGMs can identify individuals at higher risk of developing T2D earlier than traditional testing methods. By revealing these early patterns, **CGMs can help clinicians activate preventive interventions before more pronounced hyperglycaemia develops**, enhancing the potential for both prevention and remission-focused strategies.

Beyond early detection of dysglycaemia, **CGMs can play a key role in supporting behavioural change and self-management**. When combined with structured education, CGMs provide people living with, or at risk of, T2D with **real-time feedback** on how their body responds to everyday factors such as meals, physical activity and sleep, **enabling a better understanding of personal glucose patterns**. Evidence from a workplace-based prospective study showed that participants using CGMs alongside structured education achieved meaningful improvements in weight, LDL cholesterol and glycaemic control [29]. This demonstrates that **CGM data can empower individuals to make informed decisions**, fostering sustainable lifestyle changes and supporting early intervention efforts.

Finally, **CGMs provide actionable insights for HCPs**, allowing them to visualise individuals' glucose trends and make personalised, evidence-based decisions, including timely adjustments to care plans.

In addition to supporting early detection, management and decision-making, **CGM metrics**, such as time-in-range **may offer early signal of organ-specific risk**. Observational studies in adults living with T2D have shown associations between lower time-in-range and poorer cognitive function [30], as well as greater severity of MASLD [31]. While these findings are preliminary, they suggest that CGM data could also help HCPs identify individuals at higher risk of complications beyond glycaemic control, enabling more targeted monitoring and timely, personalised interventions to address potential complications.

Despite this potential, **the use of CGMs in people living with, or at risk of, T2D is not yet fully leveraged**. Key barriers include the cost of CGMs with high upfront and ongoing expenses limiting affordability for many individuals in the absence of reimbursement frameworks. There are also challenges in interpreting the large volumes of data generated, pointing to a need for better training and decision-support tools for both primary care physicians and individuals. Additionally, there is a lack of studies evaluating CGM use in the primary care setting, where most people living with, or at risk of, T2D are managed. This limits evidence on how CGMs can be integrated effectively into routine care. Broader adoption also depends on clear care pathways and guidelines on eligibility and prescribing. Addressing these gaps is essential to unlock the full potential of CGMs for early detection of dysglycaemia, supporting behavioural change, and informing personalised, timely clinical decision-making.

REMISSION AND PREVENTION PROGRAMMES MUST BE DESIGNED WITH EQUITY IN MIND TO AVOID WIDENING EXISTING HEALTH INEQUALITIES

While evidence shows that T2D remission is achievable for some people, **access to and likelihood of remission are not evenly distributed across populations**. The same **socio-economic factors** that increase the risk of developing T2D – including living in areas characterised by higher socioeconomic deprivation, reflecting factors such as lower income, employment insecurity and reduced access to healthy living – also influence who is most likely to benefit from remission strategies. Without explicit consideration of these factors, efforts to advance remission risk widening existing health inequalities.

Real-world evidence from England reinforces this concern. Analysis of the National Diabetes Audit found that remission occurs in routine clinical practice, but in a relatively small proportion of people, and is more common among those with shorter diabetes duration, lower baseline glycaemia and more favourable socio-economic circumstances. **Individuals living in more deprived areas were significantly less likely to experience remission**, even after accounting for clinical characteristics [32]. These findings suggest that **remission is shaped not only by biological factors and treatment, but also by social context and access to support**.

This has important implications for policy and service design. Programmes that rely heavily on self-management capacity, sustained lifestyle change, digital tools or intensive follow-up may disproportionately benefit individuals with greater resources, health literacy and system navigation skills. Conversely, people facing socio-economic disadvantage may encounter barriers to early diagnosis, engagement with care and sustained support, narrowing their window of opportunity for remission.

To ensure remission and prevention strategies contribute to reducing, rather than exacerbating, health inequalities, equity must be embedded in their design and implementation. This includes prioritising early detection in underserved communities, tailoring interventions to lived circumstances, providing sustained and proactive follow-up, and ensuring that innovations such as CGMs and medical interventions, including newer medicines, are accessible for all those who might benefit from them. Remission should be pursued as a population-level ambition grounded in fairness and inclusion.

STRUCTURAL CHANGES IN DIABETES PREVENTION AND CARE ARE REQUIRED TO TRANSLATE EVIDENCE AND PROMISING INNOVATIONS INTO CLINICAL PRACTICE

The evidence reviewed shows that T2D prevention and remission, as well as a reduction in complications risk, are achievable for some people, particularly when care is personalised, initiated early and supported over time. However, **translating this evidence into routine practice requires health systems to adapt**. Most diabetes care pathways remain oriented towards long-term disease management and treatment escalation, rather than early intervention, remission or sustained risk reduction, creating a **gap between new evidence and everyday care**.

One manifestation of this gap is the **absence of a single, widely accepted definition of remission**. A systematic review of remission definitions used in research studies identified substantial heterogeneity in how remission is defined and measured, including differences in glycaemic thresholds, duration and medication use [33]. This variability reflects the fact that **remission has not yet been fully embedded as a routine, operationalised goal within clinical practice**. The lack of shared criteria creates uncertainty for HCPs and people living with T2D alike, complicating coding, follow-up, communication and the development of standardised care pathways. **Clear, agreed definitions are therefore a prerequisite for integrating remission consistently into clinical care.**

Beyond definitions, broader system-level factors influence whether remission strategies can be implemented effectively. Evidence shows that achieving remission does not remove the need for **ongoing monitoring** or **preventive care**, yet existing care processes may inadvertently signal otherwise. Similarly, promising innovations such as **CGMs and therapeutic interventions offer new opportunities for early detection, education and personalised decision-making**, but their wider adoption is constrained by reimbursement structures, workforce capacity and the coordination of care across primary and specialist settings. In addition, **fragmented care and limited integration between levels of care** and disciplines such as diabetology, cardiology, nephrology and hepatology can hinder the ability of health systems to address the shared underlying mechanisms that link T2D with its complications, thereby weakening efforts to support sustained remission while preventing and delaying complications.

Together, these challenges highlight the need for structural and organisational changes that align diabetes prevention and care with new evidence. This includes adapting care models to support early detection and intervention, embedding remission within long-term care planning, strengthening integration across services and specialties, equipping individuals and HCPs with the right tools, and ensuring that definitions, data systems, funding models and protocols enable ongoing, person-centred support. Without such changes, the potential of remission strategies is unlikely to be realised in standard clinical practice.

WHAT NEEDS TO BE DONE?

1 PROMOTE EARLY DETECTION AND MANAGEMENT OF DYSGLYCAEMIA THROUGH PROACTIVE SCREENING STRATEGIES

Embed **proactive, targeted screening for dysglycaemia** – including in individuals with intermediate hyperglycaemia – within routine primary and community care, focusing on individuals at increased risk. Earlier identification should enable **timely, personalised intervention** to prevent or slow progression to T2D, support remission where possible and **reduce the long-term risk of complications** such as CVD, CKD and MASLD.

2 ENSURE EQUITABLE ACCESS TO EFFECTIVE INTERVENTIONS, THERAPIES AND ENABLING TECHNOLOGIES

Guarantee **equitable and timely access to evidence-based interventions and therapies** for T2D prevention, remission and optimal management, **including** tools such as **CGMs and pharmaceutical treatments that deliver benefits beyond glycaemic control**, such as cardiovascular, kidney and liver protection. Access should be based on clinical need and potential benefit, to ensure that advances in care improve outcomes across populations and do not widen existing health inequalities.

3 REDESIGN HEALTH SYSTEMS TO DELIVER PERSONALISED, INTEGRATED AND PERSON-CENTRED CARE

Support system-level transformation to **equip health systems and HCPs to deliver evidence-based interventions** that support T2D prevention, remission and optimal long-term management, including the prevention and delay of diabetes-related complications, as core goals of T2D care. This requires coordinated, multidisciplinary working across primary and specialist settings, with sustained support provided across the full care continuum, including structured self-management education, access to the appropriate treatments and tools, psychological and peer support.

4 INVEST IN RESEARCH ON DIABETES PREVENTION, REMISSION AND LONG-TERM OUTCOMES

Support research that strengthens the evidence base for T2D prevention, remission and optimal management. This should include research on cardiovascular, kidney and liver complications, the long-term sustainability and real-world effectiveness of interventions across the life course, and their potential to reduce health inequalities.

5 MEANINGFULLY ENGAGE PwD IN RESEARCH AND CARE DESIGN

Ensure the systematic involvement of PwD in research, innovation and care design, and support their active partnership in their own care through, for example, shared decision-making with HCPs. Their lived experience should guide the development, implementation and evaluation of interventions, enable person-centred care solutions and help identify barriers to equitable access to care.

TOWARDS A CURE FOR T1D

Just over 100 years ago, before the discovery of insulin, a diagnosis of T1D was effectively fatal, with treatment limited to extreme low-calorie, carbohydrate-restricted "starvation diets." The discovery of insulin in 1921-1922 revolutionised T1D management, enabling people with T1D to live longer, healthier lives. Since then, **continued innovations have** further **improved diabetes management and quality of life**, including advances in insulin delivery, such as insulin pens and pumps, and less invasive glucose monitoring technologies like CGMs. Significant progress has also been made in research towards screening, delaying disease progression and ultimately finding a cure.

However, a cure is not yet available, and substantial unmet needs persist. Further research and innovation are essential to deepen our understanding of T1D and to develop more effective management tools and therapies, improve the prevention and management of its complications and, ultimately, advance towards a cure accessible for all people living with the condition.

T1D REMAINS A SERIOUS AND GROWING GLOBAL HEALTH CHALLENGE

T1D is an autoimmune condition in which the insulin-producing beta cells of the pancreas are destroyed. **At diagnosis**, children typically present with classic symptoms such as excessive urination and thirst, and **nearly half present with diabetic ketoacidosis (DKA)**, a serious and potentially life-threatening complication [34]. In adults, T1D often has a more gradual onset, complicating classification; as a result, approximately **40% of adults with newly diagnosed T1D are initially misdiagnosed** [34]. Globally, **the incidence of T1D is increasing**, with **Europe** accounting for the **highest number of people living with the condition (2.7 million)** [26] and late diagnosis remains common.

To manage the condition, people living with T1D require daily insulin administration through syringes, pens or pumps, guided by blood glucose levels monitored using devices such as glucose meters or CGMs. This demands continuous attention to glucose levels and repeated adjustments in response to fluctuations that may be caused by physical activity, food intake, stress and much more.

Despite advances in technologies and therapies, day-to-day management remains complex and burdensome, requiring individuals and/or their families and carers to make up to 180 extra decisions each day.

Beyond this **daily self-management burden**, people living with T1D face a substantially **increased long-term risk of complications** such as CVD compared with people without diabetes [35], and earlier age of onset is associated with a greater cumulative lifetime risk of adverse health outcomes. Despite this elevated risk, **effective therapies to prevent or treat complications like CVD and CKD remain limited**, and agents offering cardio-renal protection are often prescribed off label. This emphasises the **need for further research to evaluate and expand the availability of treatments** that can safely and effectively reduce long-term complications in people living with T1D.

All of this has a strong impact on well-being. **People living with T1D report lower health-related quality of life** compared with the general population [36]. **Diabetes distress** is common in people living with T1D, with a prevalence ranging from **30% to 50%**, and encompasses [37] emotional burden, anxiety about glycaemic control and complications, and the ongoing psychological strain of living with a lifelong condition. Despite this substantial psychosocial burden, **access to specialised psychological support is often limited**, due to barriers such as insufficient reimbursement, lack of trained professionals and long waiting lists [38]. This highlights the **urgent need to integrate psychological care into routine T1D care** and to prioritise research and development of targeted interventions to address the psychosocial impact of the condition.

EARLIER IDENTIFICATION OF T1D IS NOW POSSIBLE THROUGH AUTOANTIBODY SCREENING, REDUCING DKA AT DIAGNOSIS

T1D progresses through four main stages based on ISLET autoantibody and glycaemic status following an autoimmune trigger. Currently, **the vast majority of individuals receive care only once they are symptomatic and insulin-dependent** (stages 3 and 4). However, in recent years, increasing emphasis has been placed on **identifying individuals in earlier, presymptomatic stages through autoantibody screening**.

Evidence points to the fact that **earlier identification substantially reduces the risk of DKA** at diagnosis, **allows** individuals and families **time to prepare**, and **enables timely access to interventions that can delay disease onset** and the need for insulin. It also facilitates the identification of individuals who may benefit from participation in **clinical trials**, particularly during earlier disease stages when disease-modifying therapies are most effective.

However, the benefits of T1D screening and early detection depend on the availability of **structured follow-up pathways for individuals who test positive**. Consensus guidance highlights the need for regular monitoring of glycaemic status, clear education on disease progression and symptom recognition, and age-appropriate, ongoing psychological and emotional support for individuals and families [39]. Access to specialist care, opportunities to participate in research, and coordinated communication across healthcare teams are essential to avoid anxiety, uncertainty or loss to follow-up.

Screening for T1D therefore requires integrated care models that ensure early identification translates into meaningful, supportive and safe care for individuals and their families over time. At the system level, further research and adequate policies are needed to guide the effective implementation of screening programmes, including regulatory frameworks, clear follow-up strategies and cost-effectiveness analyses to inform large-scale, population-level application.

DISEASE-MODIFYING THERAPIES: ALLOW FOR A SHIFT FROM REACTIVE TREATMENT TO PROACTIVE INTERVENTION

Current T1D research focuses on **disease-modifying therapies that can prevent, halt or reverse the loss of functional beta cells** across all disease stages. In November 2025, the European Medicines Agency (EMA) recommended a new therapy delaying the onset of stage 3 T1D in individuals aged eight years and older with stage 2 disease be authorised [40].

These new therapies represent a paradigm shift from reactive insulin replacement to proactive intervention targeting the underlying autoimmune process. They hold the potential not only to delay clinical onset but also to reduce the long-term burden of complications and improve quality of life.

However, their full potential can only be realised if **equitable access** is ensured **for all people who may benefit**. In addition, **further research is needed** to expand the availability of early treatments, optimise their effectiveness, establish long-term durability, determine the best timing and combinations with other therapies, and guide implementation across diverse populations.

CELL AND GENE THERAPIES OFFER A PROMISING PATHWAY TOWARDS A CURE

While screening, disease-modifying therapies and improved technologies are transforming T1D prevention and management, they do not yet eliminate the need for lifelong insulin therapy. For this reason, **researchers continue to pursue a cure**, with the **restoration of durable, endogenous insulin production** remaining the central goal of diabetes research. In this context, **cell and gene therapies** have emerged as potential solutions to achieve this, offering the potential to replace or regenerate lost beta cell function and fundamentally change the course of the disease. Beta cell replacement strategies include pancreas or ISLET transplantation.

Pancreas transplantation

Pancreas transplantation is an established clinical therapy for people living with T1D with advanced renal disease or severe complications. **It can lead to durable insulin independence, near-normal glycaemic control and potential stabilisation or improvement of microvascular complications and quality of life.** However, it requires major surgery, with associated operative risks such as thrombosis and infection, lifelong immunosuppression, with risks of toxicity, infection and malignancy, and is limited by donor organ availability.

ISLET transplantation

ISLET transplantation is a more limited option than pancreas transplantation used in **people with brittle T1D and severe hypoglycaemia, or as an alternative to pancreas transplantation.** It is less invasive than whole-organ transplantation, can restore C-peptide production (a marker of the body's own insulin secretion), markedly reduce or eliminate severe hypoglycaemia and in some cases achieve insulin independence. Nevertheless, graft function often declines over time; donor supply is limited; chronic immunosuppression remains necessary; and reimbursement and regulatory pathways remain uncertain.

Other beta cell replacement strategies

Additional beta cell replacement approaches currently under investigation include stem cell-derived ISLET replacement, xenogeneic ISLET transplantation and autologous ISLET strategies. **Stem cell–derived islet replacement** uses lab-grown beta cells to provide a renewable, standardised source of insulin-producing cells. Early trials have shown promising outcomes, including restoration of the body's own insulin secretion, achievement of glycaemic targets, elimination of severe hypoglycaemia and insulin independence in most participants after one year [41]. **Xenogeneic islet transplantation** involves transplanting insulin-producing cells from genetically engineered pigs into humans. Preclinical studies in primates have shown robust results, and early human trials are now underway in a few centres. This approach offers a potentially unlimited supply of cells, without the need for human donors. **Autologous islet strategies** use insulin-producing cells generated from an individual's own cells, which are then transplanted back. Early first-in-human cases have shown insulin independence for up to one year. Because the cells come from the receiver, this approach avoids immune rejection and is highly personalised.

Some of the **key issues** that these beta cell replacement strategies face, and that will need to be investigated and addressed to advance towards a cure, include **uncertain long-term durability and function**, the **risk of immune rejection or recurrence of autoimmune attack**, potential safety concerns such as tumour formation and **complications related to devices or transplantation**. Additional challenges involve **high cost, complex and resource-intensive manufacturing, scalability and quality control**, as well as **regulatory, ethical and access considerations**. Finally, **large-scale human data remain limited**, highlighting the need for advancing research to optimise these approaches and their long-term outcomes.

Addressing these challenges will require close **collaboration** across disciplines, including clinical medicine, stem cell science and immunology as well as coordinated efforts between research institutions and healthcare centres across Europe. Such collaboration is essential to advance manufacturing, scalability, regulatory alignment, data sharing and equitable access. Equally important is the **meaningful involvement of PwD and their carers**, whose lived experience is critical to shaping a person-centred cure and ensuring that emerging therapies are not only scientifically successful but also acceptable, accessible and deliverable in real-world settings.

WHAT NEEDS TO BE DONE?

1 IMPROVE AWARENESS AND UNDERSTANDING OF T1D

Strengthen awareness and understanding of T1D among HCPs and the wider community to support **early recognition of symptoms**, ensure **timely diagnosis**, **reduce misclassification** and **prevent** acute **complications** such as DKA.

2 SUPPORT RESEARCH AND INNOVATION TO IMPROVE HEALTH OUTCOMES

Invest in the development of advanced **self-management technologies**, improved **insulins**, **therapies for diabetes-related complications** and **psychosocial care**.

3 ADVANCE T1D SCREENING AND EARLY DETECTION

Support research to improve the **identification of individuals with early-stage T1D** and those at risk (e.g. screened for one antibody) and the implementation of evidence-based programmes, including **education and psychosocial support**. Develop regulatory frameworks, follow-up strategies, and cost-effectiveness analyses to guide **safe and equitable adoption of screening**.

4 ADVANCE ACCESS TO DISEASE-MODIFYING THERAPIES

Ensure that individuals identified through early screening can **access disease-modifying therapies** that delay or halt T1D progression. Support research to optimise the **effectiveness**, and **long-term outcomes** of these therapies.

5 ACCELERATE RESEARCH AND COLLABORATION ON CELL AND GENE THERAPIES FOR T1D

Support **investment and collaboration in cell and gene therapy research** to advance durable, safe and scalable solutions, **addressing challenges** related to immune protection, manufacturing and regulatory approval.

6 MEANINGFULLY ENGAGE PwD AND THEIR CARERS IN T1D RESEARCH AND INNOVATION

Ensure the **active involvement of PwD and their carers** in the co-design, implementation and evaluation of research and innovation, to develop person-centred therapies and solutions.

7 ENSURE EQUITABLE ACCESS TO INNOVATION ACROSS THE T1D CARE PATHWAY

Embed **equity** as core principle across access to **screening**, **disease-modifying therapies**, advance **technologies** and emerging **cures**, ensuring that innovations benefit all people living with T1D.

CONCLUSION

We are in a period of profound transformation for diabetes prevention and care. Advances in early detection, remission strategies, disease-modifying therapies and pathways toward a cure offer **unprecedented opportunities to improve outcomes and quality of life for people living with, or at risk of, diabetes**. Yet, realising this potential will depend on decisive **policy action to close the gap between scientific progress and everyday care**, ensuring that innovation is translated into equitable, person-centred solutions across Europe.

IDF Europe extends its sincere thanks to all PwD, HCPs, researchers and policymakers who contributed their expertise and lived experience to the Expert Day, as well as to the European Liver Patients Association (ELPA), the European Society of Cardiology (ESC) and the European Kidney Health Alliance (EKHA) for their contributions to the exchanges. Their insights and engagement were essential in shaping the discussions and calls to action presented in this report and will remain central to advancing policies that truly transform life with diabetes – from early detection to cure.

APPENDIX 1

The IDF Europe Expert Day, held in Brussels on December 4, featured presentations from leading experts on diabetes and other chronic conditions. The programme was organised in three sessions, each exploring a key area with the potential to transform diabetes prevention, management and long-term outcomes.

Changing mindsets: preventing T2D or driving it into remission

PRESENTATION **Prof. Kamlesh Khunti**
Professor of Primary Care, Diabetes and Vascular Medicine, University of Leicester

PRESENTATION **Prof. Tadej Battelino**
IDF Europe Chair and Head of the Department of Pediatric and Adolescent Endocrinology, University Medical Center Ljubljana

Dysglycaemia as a driver of diabetes, cardiovascular, kidney disease and liver disease: science, guidelines and future directions

PRESENTATION **Prof. Tadej Battelino**
IDF Europe Chair and Head of the Department of Pediatric and Adolescent Endocrinology, University Medical Center Ljubljana

PRESENTATION **Dr. Sibel Altintas**
Cardiologist, Hartcentrum Hasselt

PRESENTATION **Prof. Michel Jadoul**
Head of the Nephrology Department, Cliniques Universitaires Saint-Luc, and Vice-President, European Kidney Health Alliance

PRESENTATION **Dr. Luisa Vonghia**
Hepatologist, Department of Gastroenterology and Hepatology, University of Antwerp

Managing the future: towards a cure?

PRESENTATION **Dr. Alessandro Bisio**
Medical Director, BreakthroughT1D

PRESENTATION **Dr. Michiel Nijhoff**
Internist-Endocrinologist, Leiden University Medical Centre

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International Diabetes Federation
Europe

IDF Europe is the European chapter of the International Diabetes Federation (IDF).

We are an umbrella organization representing 73 national diabetes organisations in 45 countries across Europe. We are a diverse and inclusive multicultural network of national diabetes associations, representing both people living with diabetes and healthcare professionals.

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