Type 2 Diabetes: A Growing Challenge in Europe

September 2022

I. T2 diabetes is a growing challenge in Europe

Diabetes is a 'silent pandemic' and one of the major health challenges of our generation. There are 61 million people in Europe living with diabetes[1] – the equivalent to the entire population of Italy – and these numbers are expected to rise.

Type 2 (T2) diabetes accounts for around 90% of diabetes cases[2]. It is distinct from Type 1 (T1), which is a chronic and life-long autoimmune disorder that accounts for around 10%[3] of all cases[4]. T2 diabetes is a progressive chronic condition developed over time and linked to a combination of lifestyle, environmental, genetic and other factors.[5] Irrespective of the diabetes type, the disease may lead to health emergencies and severe complications if not effectively managed, including blindness, kidney failure, heart attacks, stroke and lower limb amputation[6]. However, diabetes-related complications can potentially be postponed or avoided if detected and managed early[7].

T2 diabetes can also significantly impact quality of life. People living with T2 diabetes must make round-the-clock decisions to effectively manage their condition[8], from monitoring and reacting to changing glucose levels, to taking medication, choosing when and what to eat, staying properly hydrated, and taking decisions around physical activity. The emotional burden of constant management often leads to depression, which in turn can have serious repercussions on physical health, including poorer diabetes control and treatment adherence, an increase of diabetes complications, and a higher mortality risk[9].

This T2 diabetes pandemic also places a growing demand on European health systems that are already under strain. The total expenditure in the European Region on the advanced treatment of diabetes and its complications was $189 billion (19.6% of global expenditure) in 2021[10]. Of the total T2 diabetes-related healthcare costs in Europe, half are due to hospitalisations for health emergencies[11] which arise when the condition is not effectively managed.

---

[1] IDF. Diabetes Atlas Factsheet: Diabetes in Europe in 2021

[2] IDF. About Type 2 Diabetes.

[3] Ibid.

[4] IDF. About Type 1 diabetes

[5] Barbazza E, Raposo JF, et al. (2021). Registries and information systems for diabetes care in the WHO European Region: preliminary findings for consultation

[6] WHO. (2021). Diabetes Factsheet

[7] International Diabetes Federation. (2011). Global Diabetes Plan 2011–2021

[8] Ribu L, et al. (2019). People with type 2 diabetes struggling for self-management: A part study from the randomized controlled trial in renewing health. Nursing Open

[9] Graham EA, et al. (2018). The association between diabetes and depressive symptoms varies by quality of diabetes care across Europe. European Journal of Public Health

[10] IDF. (2021). Diabetes Atlas Factsheet: Diabetes in Europe

[11] Jönsson, B. (2022). Revealing the cost of Type II diabetes in Europe. Diabetologia

II. T2 diabetes management needs evolve as the condition progresses

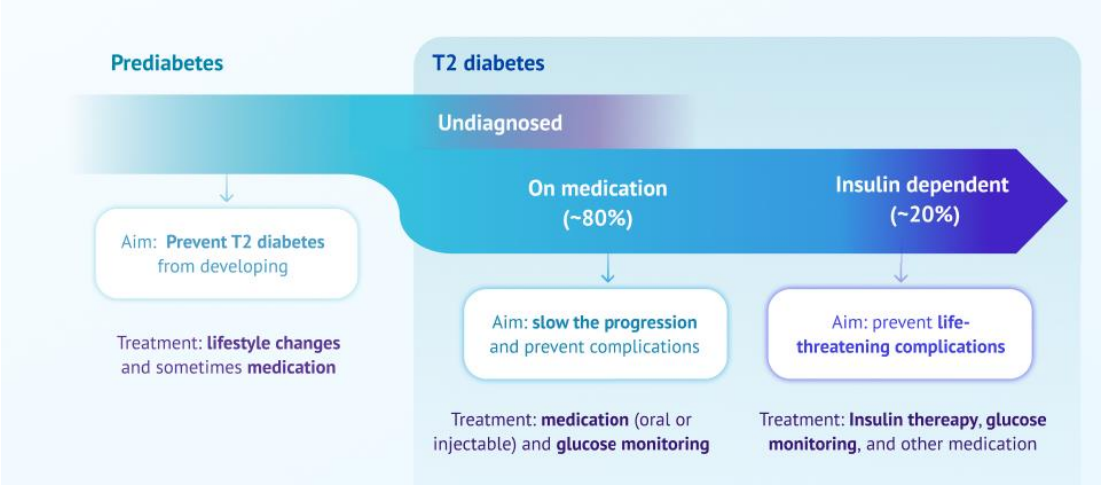
The management needs for T2 diabetes evolve as the condition progresses through several distinct phases:

- **Prediabetes** affects 12%[12] [13] of the population. Treatment includes a shift towards healthier lifestyle habits to slow or prevent the progression into T2 diabetes[14]. An estimated 70% of those with prediabetes will develop diabetes in their lifetime[15].

- **Undiagnosed T2 diabetes** accounts for more than 1 out of 3 people (36%)[16] living with T2 diabetes in Europe. Without a proper diagnosis, this population cannot receive crucial treatment to prevent further progression and complications of the condition.

- **Oral and injectable medication users** represent approximately 70-80% of those diagnosed with T2 diabetes. Treatment includes diabetes medication other than insulin, which can be taken orally or injected, together with regular glucose monitoring.

- **Insulin dependency** represents approx. 20-30% of the diagnosed T2 population. This stage of T2 diabetes shares some characteristics with T1 diabetes (which is more severe and requires more consistent monitoring). Treatment includes regular glucose monitoring and insulin delivery through the support of medical technologies, often together with other forms of medication.



[12] VALBIOTIS. (2019). Prediabetes report.
[13] Hostalek U. (2019). Global epidemiology of prediabetes - present and future perspectives. Clinical Diabetes and Endocrinology
[14] Mayo Clinic. (2022). Prediabetes.
[15] Tabak AG, Herder C, Rathmann W, Brunner EJ, Kivimaki M. (2012) Prediabetes: a high-risk state for diabetes development. Lancet.
[16] IDF. (2021) Diabetes Atlas Factsheet: Diabetes in Europe in 2021

III. Medical technology supports in the management of T2 diabetes

Medical technologies can play an important role in empowering people with T2 diabetes to effectively manage their condition throughout its different stages.

- **Glucose monitoring systems** can track and predict glucose levels, alerting people with diabetes and their care teams to urgent situations and helping reduce the need for hospitalisations or emergency services.

- **Smart insulin delivery systems** like pumps and pens, can calculate and track insulin dosage data, delivering insulin either automatically or by sending alerts that strengthen adherence[17].

- **Medical apps,** whether integrated or stand-alone, can track and display health trends, and provide education and coaching to improve diabetes management and prevent complications.

- **Algorithms** underpin these digital devices and services (either stand-alone or within the devices), turning significant amounts of health data into meaningful information to inform better decision-making by people with diabetes and their care teams.

By harnessing the power of data and digital connectivity, these solutions can empower people living with diabetes and their care teams to achieve **better health outcomes[18] and higher quality of life[19][20][21],** which in turn **reduces strains** on health systems[22] [23] and wider societal structures. For example, the use of medical devices, remote patient monitoring solutions, and a structured use of data can allow for more personalised management plans that are easier to adhere to for people living with diabetes[24]. This reduces the risk of diabetes-related comorbidities and complications, ensures a higher quality of life for people with

[17] Diatribe Foundation. (2022), Using Insulin in Type 2 Diabetes – Leveraging Technology.
[18] Martens T, Beck RW, Bailey R, et al. (2021) Effect of Continuous Glucose Monitoring on Glycemic Control in Patients With Type 2 Diabetes Treated With Basal Insulin: A Randomized Clinical Trial. JAMA. 325(22):2262–2272.
[19] Herman WH et al, (2015), Early Detection and Treatment of Type 2 Diabetes Reduce Cardiovascular Morbidity and Mortality: A Simulation of the Results of the AngloDanish-Dutch Study of Intensive Treatment in People with Screen-Detected Diabetes in Primary Care (ADDITION-Europe), Diabetes Care 38:8
[20] Health Consumer Powerhouse, (2014), Euro Diabetes Index 2014.
[21] Doddaiah, S., Shwetha, G., Gopi, A., Murthy, M., S. Bilimale, A., & Anil, D. (2021) Medical technology intervention in improving the quality of life among the type 2 diabetes mellitus patients. International Journal Of Community Medicine And Public Health, 8(10), 4806-4811
[22] Dixon, R. F., Zisser, H., Layne, J. E., et al. (2020) A virtual type 2 diabetes clinic using continuous glucose monitoring and endocrinology visits. J Diabetes Sci Technol. 14(5):908–1.
[23] Dixon, R. F., Zisser, H., Layne, J. E., et al. (2020) A virtual type 2 diabetes clinic using continuous glucose monitoring and endocrinology visits. J Diabetes Sci Technol. 14(5):908–1.
[24] Norris SL, Engelgau MM, Narayan KM. (2001), Effectiveness of self management training in type 2 diabetes: a systematic review of randomized controlled trials. In: Database of Abstracts of Reviews of Effects (DARE): Quality-assessed Reviews. York (UK): Centre for Reviews and Dissemination (UK)

diabetes and reduces the need for hospitalisation and emergency services[25].

IV. Remaining hurdles to digitally enabled T2 diabetes care

While digitally enabled technologies can support people living with T2 diabetes in managing their condition more effectively, several challenges remain:

- **Unequal access and budget for medical technologies across Europe**: Differences in reimbursement models and incentives for the use of digital diabetes solutions, together with wide variance in the approach to data collection for EHRs[26] and registries[27], limits the availability of tools and services for people living with T2D and creates inequalities across Europe.

- **Considerable gaps in education and training on T2 diabetes and the use of technologies**: Varying degrees of digital literacy and lack of training opportunities among both people living with diabetes and healthcare professionals create a lack of confidence in digital diabetes tools[28]. In addition, there is a lack of harmonized and certified educational programs that foster self-management and education, as well as inadequate virtual/remote ways to share knowledge[29].

- **Incomplete policymaker understanding of the needs of the T2 community:** While there is a growing policymaker focus on primary prevention of T2 Diabetes, such as lifestyle changes and education, secondary prevention and the evolving management needs of people living with T2 diabetes as the condition progresses does not receive nearly enough attention.

V. Overcoming the challenge of T2 diabetes requires action on multiple fronts

More effective diagnosis, treatment and care can be achieved for T2 diabetes through more patient-centric, integrated, and digitally enabled care[30]. People living with T2 diabetes need tangible solutions that not only meet their treatment targets, but ultimately enable them to live their lives to the fullest. These include:

- **Recognizing the different treatment modalities** as T2 diabetes progresses and **creating policies that speak to their unique needs**.

[25] Choudhary et al. (2021). The Challenge of Sustainable Access to Telemonitoring Tools for People with Diabetes in Europe: Lessons from COVID-19 and Beyond. Diabetes Ther, p. 10
[26] European Diabetes Leadership Forum, (2012). The diabetes epidemic and its impact on Europe
[27] Health Consumer Powerhouse. (2014). Euro Diabetes Index 2014
[28] Blonde L, Aschner P, Bailey C, Ji L, Leiter LA, Matthaei S. (2017). Global Partnership for Effective Diabetes Management. Gaps and barriers in the control of blood glucose in people with type 2 diabetes. Diab Vasc Dis Res. 2017 May;14(3):172-183.
[29] Preechasuk L, Sriussadaporn P, Likitmaskul S. (2019). The obstacles to diabetes self-management education and support from healthcare professionals' perspectives: a nationwide survey. Diabetes Metab Syndr Obes.
[30] Kar P, Goward C, Whitman M, Davies M, Willner T, Shaw K (2020). Engagement and effectiveness of digitally enabled behavioural change support for people living with type 2 diabetes. Practical Diabetes, Vol. 37 No.5.

- **Developing incentives and adequate reimbursement models that are not excessively complex or burdensome** to promote the uptake of digital solutions and ensure equal access to these tools and services.

- **Incorporating the patient voice through shared decision-making in assessing the value of medical technologies,** by capturing patient-reported outcomes.

- **Making tools and other resources available to people living with diabetes,** to help increase education on disease progression to help avoid and/or reduce serious complications, including heart failure, chronic kidney disease and retinopathy.

- **Increasing access to information to enable shared decision-making**, and more connected networks for knowledge-sharing. This may be enabled by the official accreditation of self-management and education solutions, through pan-EU harmonisation that respects people with diabetes's needs and choices on how to be educated.