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Navigating the Complex Management Landscape of Type 1 Diabetes in Clinical Practice

Type 1 Diabetes (T1D) presents a particularly demanding terrain for both the healthcare providers as well as for the patients in the field of endocrinology, both in terms of clinical management and the negative impact it has on patients' lives. The purpose of this editorial is to review the various aspects of T1D management, drawing on current research and clinical insights to provide a full overview of this complex disorder.

The specific needs of people with T1D are often overlooked. Children, adolescents and adults face significant burdens on health and quality of life associated with the early appearance of diabetes. The increased risk of complications that accompanies longer disease duration further impacts the potential for optimal care and long term good health. Taking insulin and other medications, checking blood glucose levels, balancing activity and food choices adds to already demanding challenges of physical and emotional growth contributing to feelings of distress, anxiety, worry and melancholy. Most T1D management is family delivered and poses significant demands on both the person and the family. Families need help to cope with the condition, while learning about diabetes and its management. Support must be ongoing, age appropriate and evolve

with the needs of the time. This calls for support not just from family but from school, society, workplaces and communities too.

Current challenges in diagnosis and misclassification

The proper diagnosis and classification of T1D, particularly in adults, is a key barrier in its management. Latent autoimmune diabetes of adults (LADA) is a form of diabetes with features of both T1D and T2D and has therefore been termed type 1.5 DM. The American Diabetes Association (ADA) [1] lists LADA as T1D that evolves more slowly than the classic disease and does not recognize it as a specific type of DM. The World Health Organization's term for LADA is slowly evolving immune-related diabetes [2]. According to Buzzetti et al. (2020) [3], misdiagnosis of LADA can result in improper treatment techniques. This emphasizes the need of precise diagnosis and the need for healthcare providers to be aware of the subtleties of diabetes types.

Managing acute complications

Acute complications, such as diabetic ketoacidosis (DKA), are major concerns in the treatment of T1D. DKA, a potentially fatal illness, necessitates rapid medical attention. According to Sperling et al. (2011) [4], early detection and treatment of DKA are critical for patient survival. This highlights the importance of ongoing education and knowledge about the signs and symptoms of DKA among both patients and healthcare providers [5].

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Clinical Diabetology 2023, 12; 6: 324-326

DOI: 10.5603/cd.98487

Received: 6.12.2023 Accepted: 7.12.2023

Early publication date: 18.12.2023

Lifestyle interventions and education

Lifestyle changes, such as food and exercise, are essential components of T1D management. Physical activity, according to Colberg et al. (2016) [6], is important for improving blood glucose management and lowering cardiovascular risk in people with diabetes. Furthermore, diabetes education programs are critical in empowering individuals to better manage their illness. Such programs should be adapted to each patient's specific needs, taking into account their age, cultural background, and personal preferences.

The psychosocial impact of T1D

One of the most important components of T1D management, particularly in children and adolescents, is treating the psychosocial impact of the disease. Chronic disease care can have a significant psychosocial impact on young patients. According to a systemic review and meta-analysis, children with T1D are more likely to experience psychological discomfort than their non-diabetic counterparts [7]. T1D is a chronic disease, and the demands of daily management routines can contribute to feelings of isolation, worry, and melancholy. This demands a care approach that includes psychological assistance and counselling in addition to glycemic control [8].

Technological advancements in T1D management

T1D management has been transformed by technological developments. Many T1D patients' glycemic control and quality of life have been greatly improved by Continuous Glucose Monitoring (CGM) systems and insulin pump therapy. Beck et al. (2017) [9] found that using CGM in T1D patients resulted in reduced hemoglobin A1c levels without an increase in hypoglycemia. In addition, a 7-year follow up study by Champakanath et al. (2022) [10] showed CGM, if initiated within the first year of T1D diagnosis, was associated with significant and sustained reduction in Hb1Ac. Real-life study by Karakus et al. (2023) [11] demonstrated significant increases in diabetes technology adoption among adults with type 1 diabetes along with decreased HbA1c. Current international recommendation advocates for use of Automated Insulin Delivery (AID) in all patients with T1D [12]. These technologies offer more precise and personalized diabetes management, relieving patients of the load of disease monitoring.

Navigating the complex environment of T1D necessitates a holistic approach that takes into account a wide range of factors, from psychological assistance to innovative technology tools. As research into the

complexities of T1D progresses, it is incumbent on healthcare practitioners to incorporate these findings into clinical practice, providing patient-centered, holistic care. The journey of managing T1D is combining medical interventions along with supporting the individual's general well-being, laying the way for a future in which T1D can be treated more successfully and easily.

The need of hour is:

- to create awareness and successful advocacy programs;
- to identify new avenues for improvement of management of T1D and to develop ways for a positive impact socially and economically;
- to understand the challenges and issues faced by people living with diabetes, their families, schools, workplaces who support them and work for appropriate solutions;
- to create platform for dialogue, best practice sharing and concerted advocacy to spark new and sustainable improvements in health outcomes for people living with diabetes.

Conflict of interest

The authors declare that there is no conflict of interest.

REFERENCES

1. ElSayed NA, Aleppo G, Aroda VR, et al. 2. Classification and Diagnosis of Diabetes: Standards of Care in Diabetes-2023. *Diabetes Care*. 2023; 46(Suppl 1): S19–S40, doi: [10.2337/dc23-S002](https://doi.org/10.2337/dc23-S002), indexed in Pubmed: [36507649](https://pubmed.ncbi.nlm.nih.gov/36507649/).
2. Rajkumar V, Levine SN. Latent Autoimmune Diabetes. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing, 2023. <https://www.ncbi.nlm.nih.gov/books/NBK557897/> (5.12.2023).
3. Buzzetti R, Tuomi T, Mauricio D, et al. Management of Latent Autoimmune Diabetes in Adults: A Consensus Statement From an International Expert Panel. *Diabetes*. 2020; 69(10): 2037–2047, doi: [10.2337/dbi20-0017](https://doi.org/10.2337/dbi20-0017), indexed in Pubmed: [32847960](https://pubmed.ncbi.nlm.nih.gov/32847960/).
4. Sperling M, Wolfsdorf J, Menon R, et al. Diabetes Mellitus. *Sperling Pediatric Endocrinology*. 2021; 814–883, doi: [10.1016/b978-0-323-62520-3.00021-x](https://doi.org/10.1016/b978-0-323-62520-3.00021-x).
5. Wolfsdorf J, Glaser N, Sperling MA, et al. American Diabetes Association. Diabetic ketoacidosis in infants, children, and adolescents: A consensus statement from the American Diabetes Association. *Diabetes Care*. 2006; 29(5): 1150–1159, doi: [10.2337/diacare.2951150](https://doi.org/10.2337/diacare.2951150), indexed in Pubmed: [16644656](https://pubmed.ncbi.nlm.nih.gov/16644656/).
6. Colberg SR, Sigal RJ, Yardley JE, et al. Physical Activity/Exercise and Diabetes: A Position Statement of the American Diabetes Association. *Diabetes Care*. 2016; 39(11): 2065–2079, doi: [10.2337/dc16-1728](https://doi.org/10.2337/dc16-1728), indexed in Pubmed: [27926890](https://pubmed.ncbi.nlm.nih.gov/27926890/).
7. Winkley K, Upsher R, Stahl D, et al. Systematic review and meta-analysis of randomized controlled trials of psychological interventions to improve glycaemic control in children and adults with type 1 diabetes. *Diabet Med*. 2020; 37(5): 735–746, doi: [10.1111/dme.14264](https://doi.org/10.1111/dme.14264), indexed in Pubmed: [32022290](https://pubmed.ncbi.nlm.nih.gov/32022290/).
8. Delamater AM, de Wit M, McDarby V, et al. ISPAD Clinical Practice Consensus Guidelines 2018: Psychological care of children and adolescents with type 1 diabetes. *Pediatr Diabetes*. 2018; 19 Suppl 27: 237–249, doi: [10.1111/pedi.12736](https://doi.org/10.1111/pedi.12736), indexed in Pubmed: [30058247](https://pubmed.ncbi.nlm.nih.gov/30058247/).

9. Beck RW, Riddlesworth T, Ruedy K, et al. DIAMOND Study Group. Effect of Continuous Glucose Monitoring on Glycemic Control in Adults With Type 1 Diabetes Using Insulin Injections: The DIAMOND Randomized Clinical Trial. *JAMA*. 2017; 317(4): 371–378, doi: [10.1001/jama.2016.19975](https://doi.org/10.1001/jama.2016.19975), indexed in Pubmed: [28118453](https://pubmed.ncbi.nlm.nih.gov/28118453/).
10. Champakanath A, Akturk HK, Alonso GT, et al. Continuous Glucose Monitoring Initiation Within First Year of Type 1 Diabetes Diagnosis Is Associated With Improved Glycemic Outcomes: 7-Year Follow-Up Study. *Diabetes Care*. 2022; 45(3): 750–753, doi: [10.2337/dc21-2004](https://doi.org/10.2337/dc21-2004), indexed in Pubmed: [35018417](https://pubmed.ncbi.nlm.nih.gov/35018417/).
11. Karakus KE, Akturk HK, Alonso GT, et al. Association Between Diabetes Technology Use and Glycemic Outcomes in Adults With Type 1 Diabetes Over a Decade. *Diabetes Care*. 2023; 46(9): 1646–1651, doi: [10.2337/dc23-0495](https://doi.org/10.2337/dc23-0495), indexed in Pubmed: [37458618](https://pubmed.ncbi.nlm.nih.gov/37458618/).
12. Phillip M, Nimri R, Bergenstal RM, et al. Consensus Recommendations for the Use of Automated Insulin Delivery Technologies in Clinical Practice. *Endocr Rev*. 2023; 44(2): 254–280, doi: [10.1210/endo/bnac022](https://doi.org/10.1210/endo/bnac022), indexed in Pubmed: [36066457](https://pubmed.ncbi.nlm.nih.gov/36066457/).