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ADA Updates Position Statement on Type 1 Diabetes in Children and Adolescents

The American Diabetes Association (ADA) has issued an updated position statement on type 1 diabetes in children and adolescents. The statement, authored by Chiang et al. (p. 2026), includes recommendations on diagnosis, care, and numerous other aspects of type 1 diabetes, but the main focus is on the innovations that have appeared since the original statement was issued in 2005. These include fast-developing areas of diabetes technology such as continuous blood glucose monitoring, insulin pumps, and artificial pancreas systems, but also developments in the areas of lifestyle management such as nutrition and physical activity. A core theme that emerges from the statement is that children with type 1 diabetes should not be treated as “little adults,” recognizing the issues surrounding the extrapolation of research performed exclusively in adults with diabetes. Instead, clinicians should be mindful of the various developmental stages of children and that care should be carefully adapted to suit needs and circumstances. There are also recommendations relating to the particularly sensitive period of adolescence and the transition from pediatric to adult care—a phase where self-management can start to fail, bringing serious risks of complications. While highlighting the particular needs of youth and the rapid development of technologies, the authors stress that research should now focus on the young with type 1 diabetes. They point out that it is unclear how much—or possibly if any—of the relevant research carried out in adults actually applies to children and adolescents. “In addition, more specific and lower blood glucose and HbA_{1c} goals have been proposed for children,” said author Desmond Schatz. “With advances in technology including insulin delivery systems, continuous glucose monitoring systems, and programs incorporating comprehensive treatment teams that understand the critical role of food, mind-set, and exercise, we hope that more and more children will achieve these goals and lead to improved quality of life in both the short and long term.”

Chiang et al. Type 1 diabetes in children and adolescents: a position statement by the American Diabetes Association. *Diabetes Care* 2018;41:2026–2044

Type 1 Diabetes Distress Managed Through Workshops and Online Meetings

Diabetes distress can be reduced in adults with type 1 diabetes through the use of approaches that focus on either educational/behavioral interventions or emotions, according to Fisher et al. (p. 1862). The approaches reportedly managed to reduce distress by about the same amount at 3 months after intervention, with the effects being maintained through to 9 months after baseline. The findings come from the T1-REDEEM (Reducing Distress and Enhancing Effective Management for T1D Adults) study, which recruited ~300 individuals with type 1 diabetes and elevated levels of both diabetes-related distress and HbA_{1c} and randomly assigned them to either an emotion-focused OnTrack intervention or to an educational/behavioral intervention called KnowIt. Both approaches consisted of a 1-day workshop plus four online meetings conducted over 3 months. Various assessments then took place at baseline and at 3 and 9 months. Nonintervention control groups were not included in the design of the study. According to the analysis, both groups experienced dramatic reductions in diabetes distress, and ~78% had reductions in at least one “minimal clinically important difference.” However, there were no significant differences between the two approaches. There were also significant, but modest, reductions in HbA_{1c} over the study period in both groups, although differences between the groups were again nonsignificant. The authors go on to discuss some of the reasons for the effects seen, but notably point to additional qualitative research that suggests participants benefited from interactions with others with type 1 diabetes, which created a sense of community and reassurance that previously was lacking. Author Lawrence Fisher told *Diabetes Care*: “Ours and related studies indicate that diabetes distress is highly prevalent, it is not a comorbidity or complication, and it is distinct from clinical depression. It is simply part of managing the burdens, fears, and concerns linked to dealing with diabetes over time. Thus, we suggest that addressing the emotional/behavioral side of diabetes should be a crucial component of comprehensive clinical care and not a reason for referral.”

Fisher et al. T1-REDEEM: a randomized controlled trial to reduce diabetes distress among adults with type 1 diabetes. *Diabetes Care* 2018;41:1862–1869

Genetic Risk Score to Predict Type 1 Diabetes in High-Risk Individuals

A type 1 diabetes genetic risk score (GRS) consisting of a series of single nucleotide polymorphisms (SNPs) might be able to predict progression to type 1 diabetes in autoantibody-positive relatives of individuals with type 1 diabetes. According to Redondo et al. (p. 1887), use of the type 1 diabetes GRS improves identification of relatives at high risk for type 1 diabetes and improves the ability to screen and select individuals for natural history studies and intervention trials into type 1 diabetes. The study involved 1,244 participants who were relatives of individuals with type 1 diabetes but did not have diabetes themselves although they were islet autoantibody-positive (Ab+) in serum. After genotyping and islet autoantibody screening, the authors identified 291 participants with single Ab+ with 157 converting to multiple Ab+ and 55 developing type 1 diabetes. They also identified 953 individuals with multiple Ab+ with 419 developing diabetes. Based on that data set, the authors then went on to calculate the type 1 diabetes GRS based on 30 SNPs previously associated with type 1 diabetes, including HLA and non-HLA genetic factors. In short, they found that the risk and rate of progression of islet autoimmunity and development of type 1 diabetes increased with a higher GRS. The best predictions reportedly came from a combined prediction model of GRS, Ab+ number, a metabolic diabetes risk score, and age. They also describe the performance of a GRS based on a cut-down panel of 10 SNPs. Commenting further on the research, author Maria J. Redondo said: “The type 1 diabetes GRS facilitates the use of a wealth of genetic information to improve the prediction model to identify individuals at risk for the disease and select those who can benefit from preventive strategies. As opposed to other markers, genetics can be tested as early as needed, thus potentially optimizing the window of opportunity for intervention.”

Redondo et al. A type 1 diabetes genetic risk score predicts progression of islet autoimmunity and development of type 1 diabetes in individuals at risk. *Diabetes Care* 2018;41:1887–1895

Hospital Admissions for Diabetic Ketoacidosis Is on the Rise in England

Research by Zhong et al. (p. 1870) found that the number of hospital admissions in England due to diabetic ketoacidosis (DKA) increased between 1998 and 2013. Rates increased for both type 1 and type 2 diabetes, although type 1 diabetes overwhelmingly remained the major reason for admission due to DKA. While admission rates due to DKA in type 2 diabetes remained below 1 per 1,000 person-years over the study period, they still increased, and patients with type 2 diabetes still accounted for about 20% of all admissions due to DKA. Incidence among patients with type 1 diabetes meanwhile ranged from around 25 per 1,000 person-years in 1998 to around 40 in later years. As a result, the authors describe the need to reduce hospital admissions due to DKA as “urgent.” The findings come from an analysis of the medical records of ~23,000 adults with type 1 diabetes and ~240,000 adults with type 2 diabetes, with the authors identifying all hospital admissions for DKA in the study period 1998–2013. They found that for type 1 diabetes, hospital admissions due to DKA increased in the period 1998–2007 and then remained static up to 2013. The rate in 2013 was 53% higher than in 1998. Meanwhile for type 2 diabetes, the rate increased by about 4% per annum over the study period. Attempting to explain the findings, they point out that the biggest increases in hospitalization among adults with type 1 diabetes was in those with <1 year of diabetes history and that for type 2 diabetes most admissions were for insulin users. They also touch on the point that changing diagnostic criteria over the years might explain some trends. Commenting more widely on the study, author Elizabeth J. Mayer-Davis said: “DKA is costly, common, yet generally preventable. It is critical to identify and implement effective approaches to reduce risk for DKA for both type 1 and type 2 diabetes patients.”

Zhong et al. Trends in hospital admission for diabetic ketoacidosis in adults with type 1 and type 2 diabetes in England, 1998–2013: a retrospective cohort study. *Diabetes Care* 2018;41:1870–1877

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