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ISPAD Clinical Practice Consensus Guidelines 2022: Editorial

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The ISPAD 2022 clinical practice consensus guidelines were developed and completed during unprecedented times. First, due to the impact of the COVID-19 pandemic on people with diabetes and their families, diabetes professionals and care teams, our own families, health systems throughout the world, public health policy, and our individual work practices. Second, in the 4 years since the 2018 guidelines,[1] we have also experienced considerable evolution of technology for glucose monitoring, insulin delivery, and health care delivery. Moreover, in the 27 years since the first guidelines were published,[2] overall knowledge has profoundly impacted the management of diabetes, particularly in young children and youth, including wider use of insulin analogs, insulin pumps, continuous glucose monitoring (CGM), and automated insulin delivery devices. In recognition of these advances in diabetes care, the 2018 single guideline on diabetes technologies has been split into two separate guidelines for 2022: glucose monitoring and insulin delivery. The guideline on glycemic targets highlights the role of technology, with adoption of a unified fingerstick blood glucose level (BGL) target of between 4 and 10 mmol/L (70–180 mg/dl), which aligns with the target CGM time in range, along with a tighter fasting target range of 4–8 mmol/L (70–144 mg/dl).

Technological advances have also impacted prediction and prevention of T1D. While individuals with a first-degree relative with T1D have ~15-fold increased risk of T1D, approximately 85% of those with a new diagnosis do not have a family history of T1D. Hence, general population screening programs to determine T1D risk are expanding, and collaborative T1D networks testing interventions seeking to delay the disease process at all stages of disease are growing, including the use of CGM as a way to assess risk and track glycemia in these settings.[3]

For type 2 diabetes (T2D), follow-up of large cohorts from around the globe continue to inform the rates of co-morbidities and complications in youth-onset T2D, while pharmacologic therapies for the treatment of youth-onset T2D have expanded.[4] For monogenic diabetes, technological advances include the use of next-generation sequencing, which is now considered the best approach for early molecular diagnosis and to guide treatment, particularly for neonatal diabetes. For cystic fibrosis-related diabetes (CFRD), the guidelines have been updated to recommend insulin pumps and CGM for CFRD as appropriate and to address the effect of CF transmembrane conductance regulator (CFTR) modulator therapy (HEMT) on CFRD.

In all, there are 25 guidelines in 2022. They provide important updates on adolescence, ambulatory care, screening/management of complications and co-morbidities, CFRD, diabetic ketoacidosis, glycemic targets, education, epidemiology, exercise, hypoglycemia, monogenic diabetes, psychological care, preschool and school, Ramadan and other religious fasting, sick day management, stages of T1D, technology, and surgery. Overarching principles in all these new guidelines include use of technology, individualized person-centered care, and the impact of the COVID-19 pandemic, including a specific guideline in 2020.[5]

The great influenza pandemic began in 1918, before insulin was available to treat T1D; however, a century later we faced a new pandemic and still have problems with access to insulin, as well as BGL monitoring, insulin delivery devices, diabetes education, and adequate care. In 2021, it was estimated that 8.4 million people worldwide have T1D. Of these 1.5 million (18%) were younger than 20 years and 1.8 million (20%) of all people with T1D were from low-income and lower-middle-income countries.[6] Using a discrete-time illness-death model, the remaining life expectancy of a 10-year-old child diagnosed with T1D in 2021 was estimated to range from a mean of 13 years in low-income countries to 65 years in high-income countries.[6] Disparities in the social determinants of health and inequitable access to modern diabetes therapies remain significant barriers to achieving BGL targets and optimizing clinical outcomes. Disparities in care are addressed throughout the 2022 guidelines and a stand-alone comprehensive guideline is included on management of the child, adolescent, and young adult with diabetes in limited resource settings.

In total, 250 authors representing more than 55 countries contributed to the guidelines, including a person with diabetes or a carer, as well as a mix of early-career, mid-career, and senior clinicians. Most of the 2022 guidelines have new first authors. The guidelines benefited immensely from a project officer, Dr. Leena Priyambada, who has contributed to a more robust process of evidence grading[7] (Table 1) in collaboration with authors and co-editors, including three new co-editors (Linda DiMeglio, Farid Mahmud, and Loredana Marcovecchio). We also welcomed Joseph Wolfsdorf as guest editor. The writing teams have worked tirelessly, with meetings by zoom, often early morning or late at night. We sought conflict of interest disclosures during the process of writing the guidelines rather than at the time of publication, which was a recommendation from the 2018 guidelines and is now required by many other guideline developers. Finally, all authors followed guidance for use of language in the care of people with diabetes.[8]

TABLE 1 Evidence grading used in the 2022 ISPAD guidelines[7]

ADA evidence-grading system for "Standards of Medical Care in Diabetes"	
Level of evidence	**Description**
A	Clear evidence from well-conducted, generalizable randomized controlled trials that are adequately powered, including: • Evidence from a well-conducted multicenter trial • Evidence from a meta-analysis that incorporated quality ratings in the analysis Compelling nonexperimental evidence, that is, "all or none" rule developed by the Centre for Evidence-Based Medicine at the University of Oxford Supportive evidence from well-conducted randomized controlled trials that are adequately powered, including: • Evidence from a well-conducted trial at one or more institutions • Evidence from a meta-analysis that incorporated quality ratings in the analysis
B	Supportive evidence from well-conducted cohort studies • Evidence from a well-conducted prospective cohort study or registry • Evidence from a well-conducted meta-analysis of cohort studies Supportive evidence from a well-conducted case–control study
C	Supportive evidence from poorly controlled or uncontrolled studies • Evidence from randomized clinical trials with one or more major or three or more minor methodological flaws that could invalidate the results • Evidence from observational studies with high potential for bias (such as case series with comparison with historical controls) • Evidence from case series or case reports Conflicting evidence with the weight of evidence supporting the recommendation
E	Expert consensus or clinical experience

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CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

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