Healthcare Improvement Scotland | SIGN

SIGN 170

Optimising glycaemic control in people with type 1 diabetes

Quick reference guide

March 2024

This Quick Reference Guide provides a summary of the main recommendations in **SIGN 170 Optimising glycaemic control in people with type 1 diabetes**.

Recommendations **R** have been adapted from published evidence-based clinical guidance.

Details of the publications from which these recommendations have been sourced can be found in the toolkit, available on the SIGN website: **www.sign.ac.uk**

NHS SCOTLAND

Environmental and social factors

R Healthcare professionals should assess the social determinants of health in people with diabetes mellitus to better guide them to the most appropriate resources.

R A communication style that uses person-centred language and emphasises positive affirmative action and active listening, elicits patient preferences and beliefs, and assesses literacy, numeracy, and potential barriers to care should be used to optimise patient health outcomes and health-related quality of life.

Structured education

R Include continuous glucose monitoring (CGM) in the structured education programme provided to all adults with type 1 diabetes and ensure that people are empowered to use CGM devices.

R Include CGM, which should encompass real-time CGM and flash glucose monitoring, in the continuing programme of education provided to all children and young people with type 1 diabetes and their families or carers.

Psychological and behavioural interventions

R People with hypoglycaemia unawareness, which can co-occur with fear of hypoglycaemia, may be treated using an evidence-based structured intervention to help re-establish awareness of symptoms of hypoglycaemia and reduce fear of hypoglycaemia.

R Members of diabetes professional teams should be alert to the possibility of bulimia nervosa, anorexia nervosa and disordered eating in people with type 1 diabetes with:

- over-concern with body shape and weight
- low BMI
- hypoglycaemia
- suboptimal overall blood glucose control.

R Integrated intensive specialist care with the combined involvement of diabetes professionals and mental health professionals with experience in managing eating disorders is recommended to support people with type 1 diabetes and an eating disorder or compulsive insulin omission for weight control. Some patients may benefit from a specialist inpatient eating disorders service.

R Referrals for treatment of depression or anxiety should be made to mental health services with experience using cognitive behavioural therapy or other evidence-based treatment approaches in conjunction with collaborative care with the person's diabetes treatment team.

Glucose-lowering and glucose-monitoring technologies

R To minimise inequalities in accessing diabetes technologies, clinicians should proactively initiate meaningful discussions with all patients with type 1 diabetes about the suitability of a closed-loop system for their individual circumstances.

Single hormone closed-loop systems should be available to people with type 1 diabetes (paediatric and adult) who:

- under their current diabetes care plan continue to have suboptimal glycaemic control, a high risk of severe hypoglycaemia, or impaired awareness of hypoglycaemia, or
- experience diabetes-related distress, measured using a validated tool, that adversely affects quality of life or their ability to manage diabetes, and which is likely to be improved by moving to a closed-loop system.

People who can achieve the desired glycaemic targets using finger prick testing, flash glucose monitoring or continuous glucose monitoring plus multiple daily insulin injections, or flash glucose monitoring plus an insulin pump, should be supported to remain on their current diabetes care plan subject to their circumstances and quality of life. People who are currently using continuous glucose monitoring in combination with an insulin pump (non-integrated) should be offered a closed-loop system, which may provide them with additional clinical benefits at lower costs.

In their discussions, people with type 1 diabetes and clinicians must consider the day-to-day requirements of managing closed-loop systems, for example, responding to alerts or replacing sensors when required. Support on how to use the closed-loop system effectively should be provided to everyone offered the technology.

The Scottish Care Information (SCI)-Diabetes database should be used to collect clinical and person-reported outcomes data from people with type 1 diabetes using closed-loop systems to inform quality of care improvements.

R Offer adults with type 1 diabetes a choice of continuous glucose monitoring based on their individual preferences, needs, characteristics, and the functionality of the devices available.

See box 1 for examples of factors to consider as part of this discussion.

R Offer real-time continuous glucose monitoring to all children and young people with type 1 diabetes, alongside education to support children and young people and their families and carers to use it.

R The continuation of CGM and/or continuous subcutaneous insulin infusion should be considered in hospitalised persons with diabetes without cognitive impairment and ideally with the presence of a family member who is knowledgeable and educated in the use of these devices or with a specialised inpatient diabetes team available for advice and support.

Box 1: Criteria to consider in recommending a CGM device:

- Accuracy of the device
- Whether the device provides predictive alerts or alarms and if these need to be shared with anyone else (for example, a carer)
- Whether using the device requires access to particular technologies (such as a smartphone and up-to-date phone software)
- How easy the device is to use and take readings from, including for people with limited dexterity
- Fear, frequency, awareness and severity of hypoglycaemia
- Psychosocial factors
- The person's insulin regimen or type of insulin pump, if relevant (taking into account whether a particular device integrates with their pump as part of a hybrid closed loop or insulin suspend function)
- Whether, how often, and how the device needs to be calibrated, and how easy it is for the person to do this themselves
- How data can be collected, compatibility of the device with other technology, and whether data can be shared with the person's healthcare provider to help inform treatment
- Whether the device will affect the person's ability to do their job
- How unpredictable the person's activity and blood glucose levels are and whether erratic blood glucose is affecting their quality of life
- Whether the person has situations when symptoms of hypoglycaemia cannot be communicated or can be confused (for example, during exercise)
- Clinical factors that may make devices easier or harder to use
- Frequency of sensor replacement
- Sensitivities to the device, for example local skin reactions
- Body image concerns

Glucose metrics

R **The two metrics, % time in range (TIR) and % time below range (TBR), should be used as a starting point for the assessment of glycaemic control and as the basis for therapy and lifestyle adjustment. Particular emphasis on reducing % TBR is warranted when the percentages of CGM values falling below 3.0 mmol/L or 3.9 mmol/L are close to or exceed targets.**