NHS Frimley

Medicines Optimisation Position Statement

Statement	**Hybrid closed loop (HCL) systems for managing blood glucose levels for people living with type 1 diabetes**
Statement number	026
Approved by Medicines Optimisation Group	n/a
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Summary

NHS Frimley recommends the use of hybrid closed loop systems for managing blood glucose levels in type 1 diabetes **by specialists only** in accordance with NICE TA943

Background

HCL systems use a mathematical algorithm to deliver insulin automatically in response to continuously monitored interstitial fluid glucose levels. They use a combination of real-time glucose monitoring from a continuous glucose monitor (CGM) device and a control algorithm to direct insulin delivery through continuous subcutaneous insulin infusion (CSII).[1]

NICE published a technology appraisal (TA943) on 19 December 2023 recommending hybrid closed loop systems as an option for managing blood glucose levels in type 1 diabetes.[1] See below for recommendations for each patient group.

HCL systems are only recommended if they are procured at a cost-effective price agreed by the companies and NHS England and implemented following NHS England's implementation plans.

HCL systems should only be used with the support of a trained multidisciplinary team experienced in CSII and CGM in type 1 diabetes. This is important for initiating the technology with a holistic view of someone's condition. The multidisciplinary team can identify where use of HCL can help people struggling to self-manage - and not solely look at HbA1c. This support would also help people eligible to be offered HCL for whom psychological issues may be a barrier – e.g. getting used to the automation in the system and "letting go" if anxious – by addressing these concerns when making the offer.

The team will be able to initiate HCL if the person or their carer:

- is able to use them, and
- is offered approved face-to-face or digital structured education programmes, **or**
- is competent in insulin dosing and adjustments. [1]

Adults

HCL systems are recommended as an option for managing blood glucose levels in type 1 diabetes for adults who have an HbA1c of 58 mmol/mol (7.5%) or more, or have disabling hypoglycaemia, despite best possible management with at least 1 of the following:

- CSII
- real-time continuous glucose monitoring
- intermittently scanned continuous glucose monitoring.[1]

Pregnancy

HCL systems are recommended as an option for managing blood glucose levels in type 1 diabetes for women, trans men and non-binary people who are pregnant or planning to become pregnant.[1]

Children and young people

HCL systems are recommended as an option for managing blood glucose levels in type 1 diabetes for children and young people.[1]

Implementation

The NICE TA implementation period has been extended to 5 years for this technology. Based on the commercial framework and the recommendations in this guidance, NHS England has developed a 5-year national strategy with advice and guidance to NHS providers on the phased uptake approach. The strategy will centre on improving health outcomes and reducing health inequalities.

The plan for NHS Frimley is that the phased rollout will initially start with:

- children & young people
- women, trans men and non-binary people who are pregnant or planning to become pregnant
- adults who have high or uncontrolled HbA1c of > 69 mmol/mol
- Adults who already use a compatible insulin pump and want to transition to an HCL system

Effectiveness

Standard care for type 1 diabetes involves regularly measuring blood glucose levels by self-monitoring (blood testing) or by using a continuous glucose monitor). Blood glucose levels are managed with multiple daily insulin injections or by using a pump to inject insulin under the skin (CSII). The aim of treatment is to decrease blood glucose levels and keep them within a healthy range.

Continuously managing blood glucose levels is a substantial mental burden for people with type 1 diabetes and their families or carers. HCL systems deliver insulin automatically using a calculation based on continuous glucose measurements.

Clinical trial and real-world evidence show that HCL systems are more effective than standard care at maintaining blood glucose levels within a healthy range. HCL systems are likely to be cost effective for adults who have an HbA1c level of 58 mmol/mol (7.5%) or more or have disabling hypoglycaemia (when hypoglycaemia occurs frequently or without warning, so the person is constantly anxious about having hypoglycaemic episodes. HCL systems are likely to

be more cost effective for children and young people than adults, so they are also recommended for children and young people irrespective of their HbA1c level. Blood glucose levels are harder to manage in pregnancy, so they are also recommended for women, trans men and non-binary people with type 1 diabetes who are pregnant or planning to become pregnant.

References

1. National Institute for Health and Care Excellence. Technology Appraisal 943; Hybrid closed loop systems for managing blood glucose levels in type 1 diabetes, 20 December 2023.