

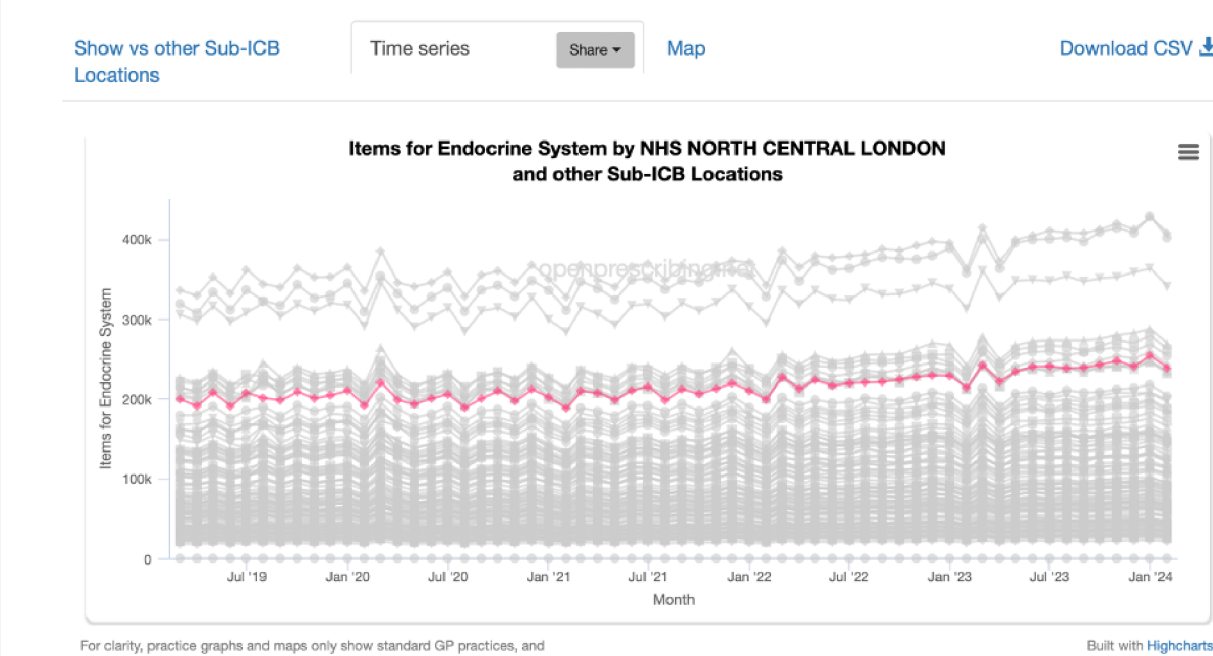
Optimising Type 2 Diabetes Care with Continuous Glucose Monitoring as an Educational Tool and Lifestyle Interventions to Reduce Medication Dependence: A Pilot Study in North Central London Integrated Care Board (NCL ICB) March 2024

Contact: Efa Mortty, former Head of Medicines Management and pilot lead, NCL ICB, info@n4ws.co.uk

Introduction

Type 2 diabetes (T2D) presents a growing challenge both locally and globally, with stagnant metabolic control despite escalating expenditure on endocrine treatments. Pandemic-related disruptions have further hindered diabetes management and monitoring efforts, exacerbating disparities in care. The escalating costs of antidiabetic medications, illustrated in Graph 1, exceeding £2.5 million monthly in North Central London (population of approx 1.7mil) underscore the urgency of effective interventions. Despite previous efforts by medicines management teams (MMT), successful strategies to contain costs and enhance patient outcomes remain elusive.

Graph 1 –Cost Trend of antidiabetic drugs in NCL (Feb 2019 - Feb 2024) (1)



Healthy diet and lifestyle are paramount for diabetes management and complication prevention (NICE NG28, 2022) (2). Recent advancements suggest they may even induce diabetes remission. Real-time blood sugar monitoring via CGM provides immediate insights into dietary impacts on diabetes, this combined concept was explored in NCL ICB.

Synopsis

A pilot feasibility study in the US (3) found that giving CGM technology to patients may be an effective educational intervention tool for both primary care professionals and their adult patients newly diagnosed with type 2 diabetes. Patients involved in the study achieved type 2 diabetes remission that was independent of additional medication use, and without weight loss being the primary focus of the study. Another study in the UK (4), which explored a different approach demonstrated positive health outcomes for patients who modified their diets. Both studies suggested patients follow a low carbohydrate diet to achieve success in improving their diabetes.

Resources were provided for the NCL pilot included low carbohydrate approaches, it was not explicitly recommended to patients to incorporate this approach specifically for this pilot. Patients were encouraged to eat foods that did not spike their blood sugar.

The pilot aimed to enhance health outcomes for newly diagnosed patients with type 2 diabetes or those with poor control. It involved implementing dietary and lifestyle adjustments alongside continuous glucose monitoring (CGM) use. The objective was to empower patients to manage their condition, potentially reducing medication dependence and costs, while generating savings by averting health complications and minimising medical visits and treatments resulting from inadequate diabetes control.

Methodology

- ICB governance processes completed and approval gained
- Expression of interest distributed to GP practices in NCL area late 2022
- Training provided on medication modification and CGM use
- Inclusion criteria: Patients needing antidiabetic agent initiation or step-up therapy with HbA1c > 48mmol/mol or > 58mmol/mol respectively
- Exclusion criteria: Patients on insulin therapy
- Week 1: Patients attend clinic, receive resources for diet/lifestyle changes, CGM administered, baseline data captured (HbA1c, BP, weight)
- Week 2: Patients continue dietary changes, attend clinic for CGM sensor change
- Week 6: Patients return readers, complete post-pilot survey
- Weeks 8-12: Patients undergo follow-up data collection (HbA1c, BP, weight)

Resources

- Standard Operating Procedure (SOP) for clinicians on how to run the pilot
- EMIS searches to identify eligible patients for pilot.
- Feedback from patients and clinicians about their experience obtained via a Microsoft Forms Survey
- Patient leaflet

Patient Leaflet

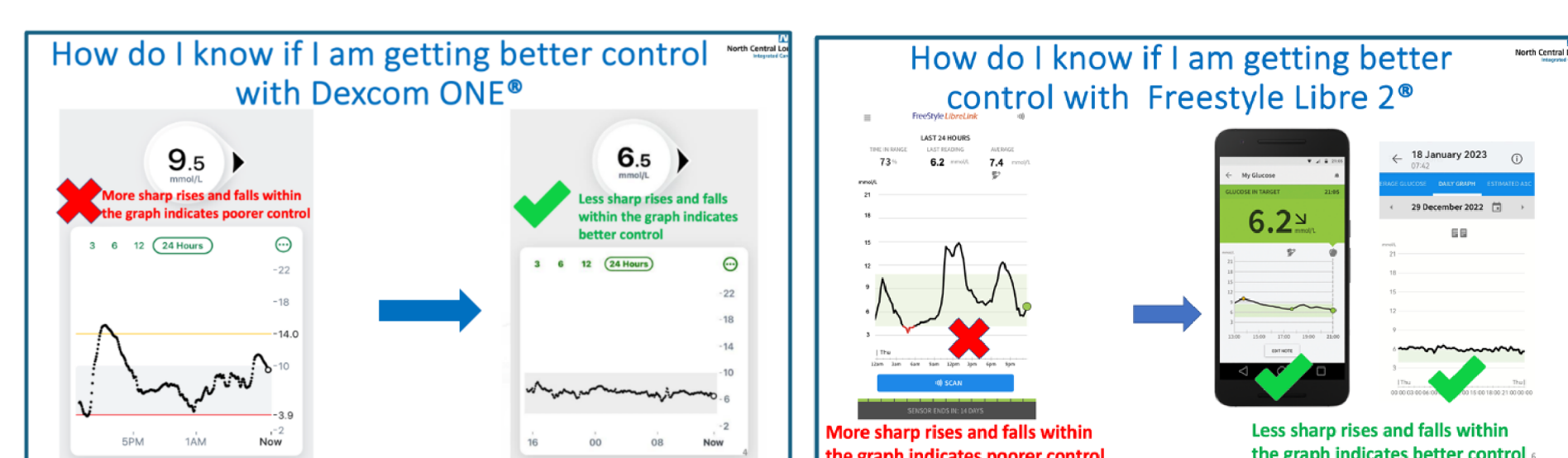
The leaflet outlined the 6-week pilot programme aimed at helping individuals manage type 2 diabetes by utilising Continuous Glucose Monitoring (CGM) technology. It highlighted the importance of receiving real-time feedback on lifestyle choices and the potential benefits of reducing HbA1c levels, a key indicator of diabetes control.

It explained that participants would wear a CGM device as an educational tool for 6 weeks. It sign posted to resources like the

Freshwell app (5), an ebook- Low-Carb for Any Budget (6) and local educational materials. Additionally, the leaflet mentioned the availability of the Diabetes Self-Management Programme for further assistance.

The leaflet offered guidance on managing hypoglycaemia, and provided contact details for additional support if needed. It also suggested food swaps to help control blood sugar levels, promoting dietary adjustments as part of diabetes management.

It demonstrated the CGM devices offered, presenting screenshots of glucose control graphs as visual aids. These graphs served as examples for patients to emulate in their diabetes management efforts, aiming to achieve better control and lower HbA1c levels over time.



Results

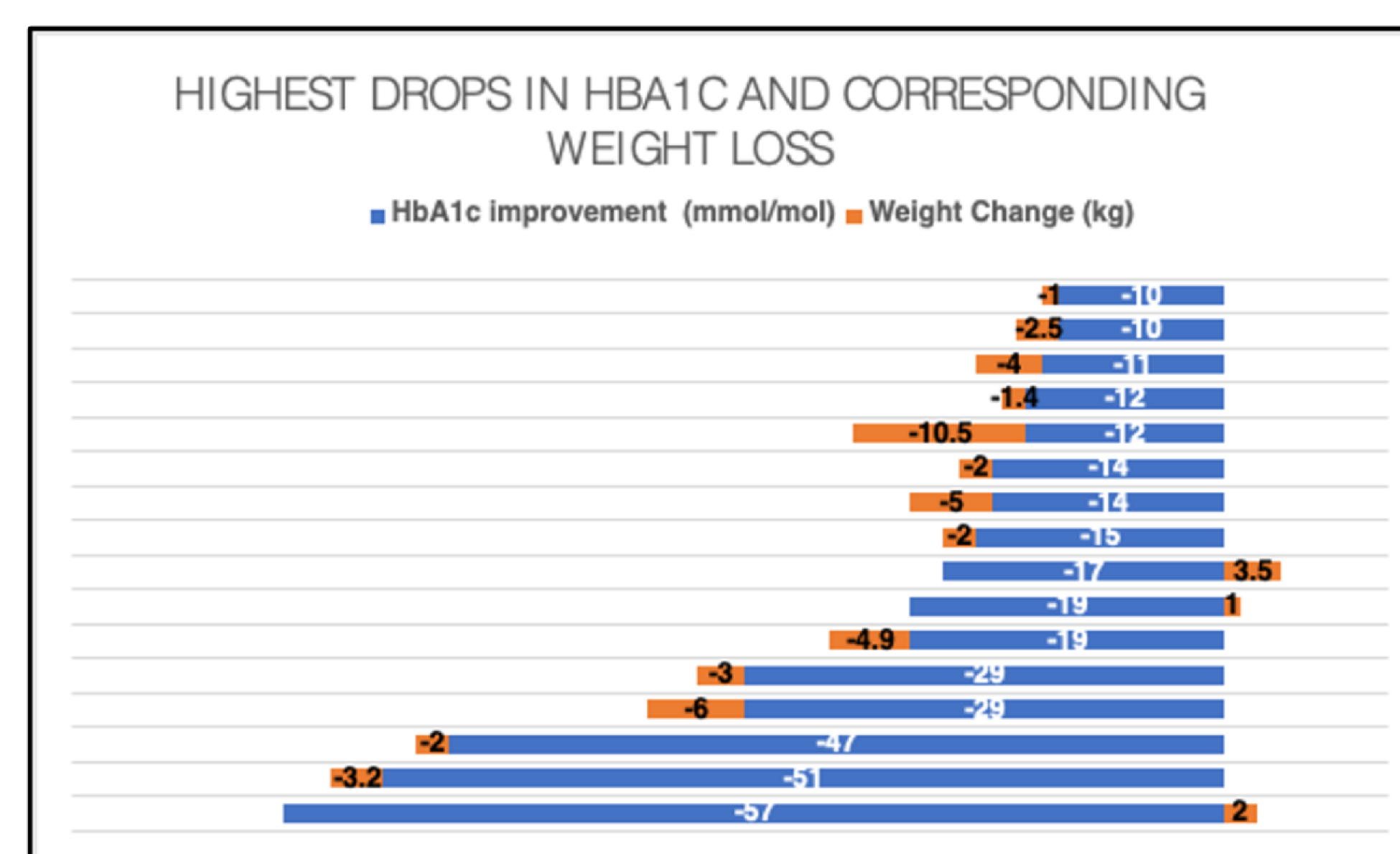
Eight GP practices participated, recruiting 95 patients. Clinicians provided feedback on their experience and progress regularly to the ICB MMT. The main focus of the pilot was to monitor improvements in HbA1c levels. Participating sites were requested to also record changes in both weight and blood pressure. There were numerous instances of incomplete data reported, primarily attributed to time and resource limitations encountered by the pilot sites and this data was not included in the analysis.

OVERALL AVERAGES					
HbA1c (mmol/mol)* n=70		Weight (kg)* n= 52		BP (mmHg)* n=65	
BEFORE PILOT	AFTER PILOT	BEFORE PILOT	AFTER PILOT	BEFORE PILOT	AFTER PILOT
70.0 mmol/mol	60.6 mmol/mol	82.26kg	80.5kg	131/81 mmHg	123/76 mmHg

*Not all pilot sites were able to record weight or blood pressure during course of pilot, so figures are based solely on returns provided. Averages included values of patients who performed poorly as well.

HbA1c Summary Breakdown (n=70 patients with full dataset)	Results outcome
% of patients with HbA1c improvement, 5mmol/mol or more	64%
Average HbA1c at start of pilot	70.0 mmol/mol
Average HbA1c at end of pilot mmol/mol	60.6 mmol/mol
Average improvement of HbA1c reduction	-9.8 mmol/mol
HbA1c improvement of 10mmol/mol or more	28 patients
HbA1c improvement of 5mmol/mol or more	45 patients
HbA1c worsened by > 5mmol/mol	5 patients
HbA1c stayed the same	20 patients
No. of patients achieving HbA1c < 48 mmol/mol	5 patients
No. of patients achieving HbA1c of < 42 mmol/mol	1 patient

Weight Summary Breakdown (n=52 patients with full dataset)	Results outcome
% of patients who have achieved 1kg + weight loss	69%
Average weight of group before pilot	82.2kg
Average weight of group after pilot	80.5kg
Total weight loss for group (including pts who gained wt.)	88kg
Average weight loss per patient	1.7kg
Weight loss range	0.4-10.5kg
number of people who lost weight	37
number of people who gained weight	8
number of people who maintained weight	7



Summary of blood pressure outcomes (n=65)	
Improved	36
Stayed the same	17
Deteriorated	12

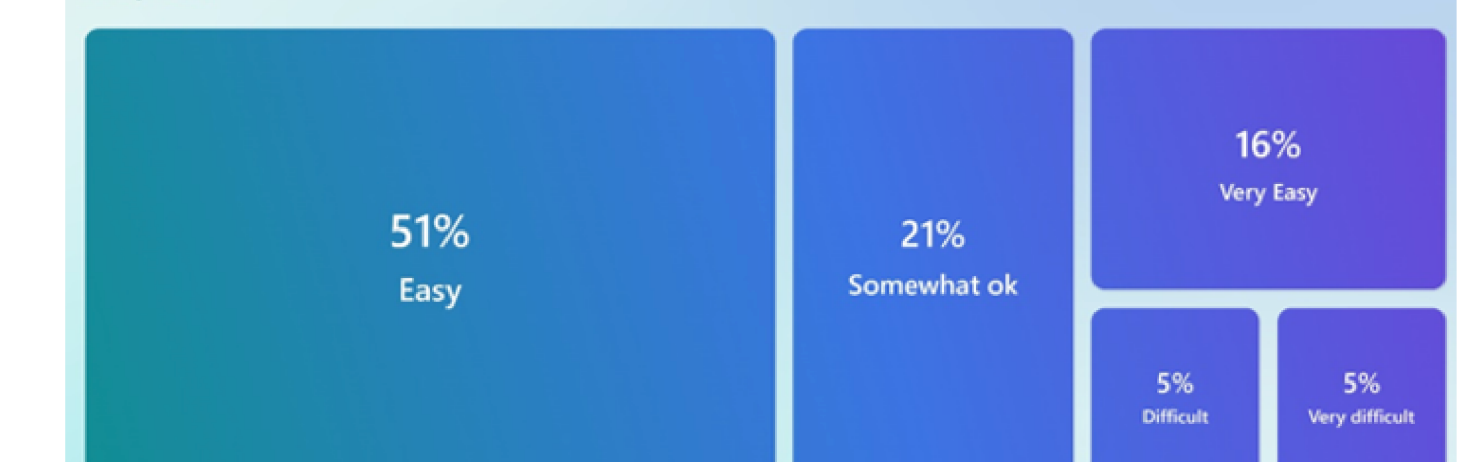
Financials:

The net cost avoidance for 45 patients for whom data was available, defined by an improvement of 5 mmol/mol or more was estimated to be £17,032 this was primarily from cost avoidance in initiating further therapy.

Additionally, certain medications were discontinued during the pilot were not factored into the costings calculations. Some patients had their HbA1c measured earlier than usual due to the deadline for pilot completion, potentially not fully capturing improvements.

Patient Feedback results

Please rank the level of difficulty in being able to change your lifestyle over the last 6 weeks for this pilot.



What was the most supportive or helpful to you in optimally managing your diabetes during this pilot? Please choose more than one answer where relevant.



What was your exercise and overall activity levels like BEFORE undertaking this pilot?

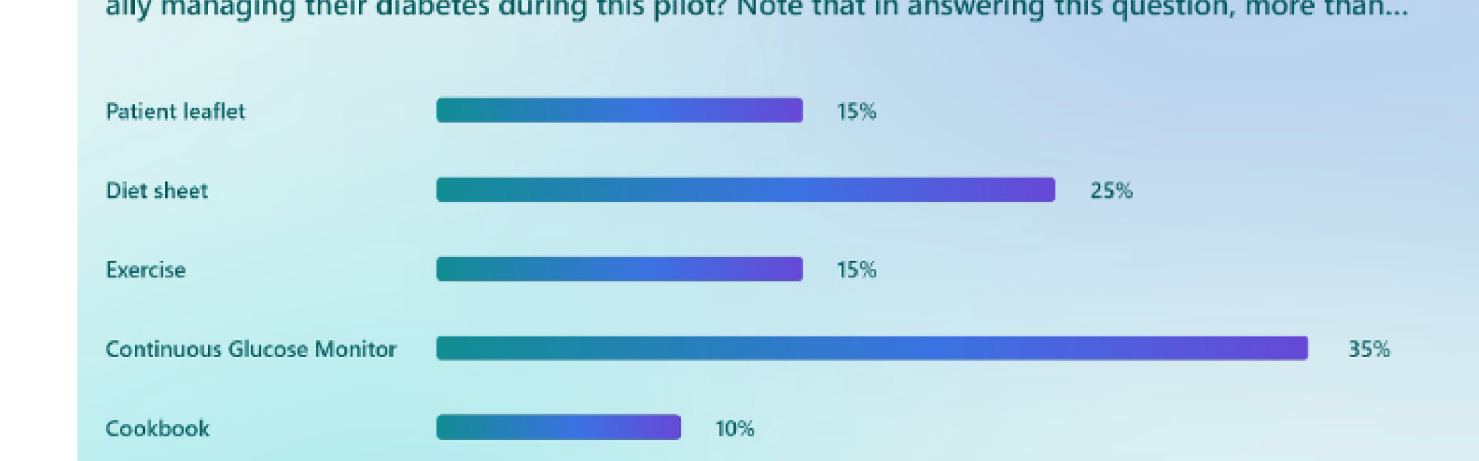


What are your exercise & overall activity levels like now, having undertaken this pilot?



Clinician Feedback results

What resource tool(s) do you think was the most supportive or helpful to your patients in optimally managing their diabetes during this pilot? Note that in answering this question, more than...



Health Improvements and Recommendations

This pilot demonstrated significant improvements in HbA1c, weight, and blood pressure among participants, highlighting the effectiveness of integrated dietary, lifestyle changes, and CGM usage. Notably, a 14% reduction in mean HbA1c levels was achieved in the short study period, emphasising the impact of patient and clinician dedication.

Recommendations to the North Central London ICB:

- Integrate CGM and supportive tools into existing Diabetes Management Programs for enhanced patient outcomes. this will require a dedicated service
- Identify funding to implement this initiative to avoid future medication and treatment cost and improve patient outcomes
- Develop a system for ongoing support for the patients

References

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