Diabetes prehabilitation programme

It is well established that patients with high BMI or significantly elevated HbA_{1c} who require surgical procedures are more likely to experience higher inter- and post-operative complication rates, delayed recovery times and longer hospital stays (Pozzobon et al, 2018; Wang et al, 2019). One Wirral, a community interest company, is pioneering a proactive approach to address these challenges. This article outlines the programme's structure, objectives and preliminary outcomes, shedding light on the potential benefits of integrating prehabilitation into routine care.

Programme overview

In view of exposure to the potential problems noted above, people with a BMI >40 kg/m^2 or HbA_{1c} >69 mmol/mol are deemed to be at very high risk for routine elective surgery (Barker et al, 2015; Nightingale et al, 2015), and can be stuck, almost indefinitely, on surgical waiting lists until these metrics improve. The overall aim of the Diabetes Prehabilitation Programme is to establish a multi-layered system that supports both primary and secondary care systems to improve perioperative outcomes and the overall health of people with diabetes. Reductions in weight and HbA_{1c}, and improvements in cardiovascular health can improve a person's surgical journey, leading to improved outcomes for both the individual and the NHS.

What is prehabilitation?

"Prehabilitation" is the practice of enhancing a person's functional capacity prior to surgery in a patient-centred way, aiming to help optimise post-operative outcomes (Durand et al, 2019). This evidence-based practice has demonstrated success in reducing post-operative pain, complication rates and length of hospital stay (Myers et al, 2021).

By identifying and emphasising what matters most to patients, the programme seeks to motivate behavioural changes that will help them to lose excess weight, improve HbA_{1c} levels, and enhance overall health and well-being.

Inclusion criteria

Initially implemented across two primary care networks, the programme has since expanded to cover the whole of the Wirral. Patients with diabetes and either a BMI >40 kg/m^2 or HbA_{1c} >69 mmol/mol who are waiting for, or have been referred for, a surgical procedure are eligible.

Those most likely to benefit from prehabilitation are identified proactively by using a population health management platform. By analysing surgical lists and primary care data through CIPHA (Combined Intelligence for Population Health Action), the right patients for referral are identified at the right time. We have harnessed digital technology to enable the delivery of excellent personalised care in order to optimise patient well-being and surgical readiness. The programme also receives referrals directly from the local hospital's pre-operative clinics when a patient with diabetes does not meet the pre-op criteria owing to their BMI or HbA_{1c} measurement.

Patients are contacted by the team within 48 hours of referral, given an overview of the programme and offered initial consultations with both a prehabilitation health coach and a nurse practitioner with specialist interest in diabetes.

Programme delivery

The health coach conducts initial physical assessments, including checks on height, weight, BMI, waist circumference and blood pressure. They are also trained to undertake phlebotomy, so can obtain an up-to-date measurements of HbA_{1c}, U&Es, etc., if required. An individualised assessment of the patient's diet, lifestyle, exercise ability, mental health and well-being provides a detailed understanding of their overall health, and potential barriers to behavioural change. Patients

Julia Thomas
Nurse Practitioner and Queen's Nurse, One Wirral CIC

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are advised of the range of services available to them as Wirral residents, given personalised exercise advice and lifestyle plans, and offered attendance at the programme's specialised group prehabilitation classes.

The nurse practitioner undertakes a comprehensive review of the patient's diabetes history, including time since diagnosis, HbA_{1c} trends, current and previously used medications (including assessment of their impact on HbA_{1c} and why they were stopped) and noting other important comorbidities. A "back-to-basics" approach is used to check their understanding of their diabetes, HbA_{1c} and treatment targets. A range of resources, including health apps and video links, are shared with the patient to help improve their understanding of diabetes and management of dietary changes. The clinician and patient together formulate an individualised management plan, which includes agreed changes to diet, lifestyle and medications, alongside necessary reminders such as hypo advice, DVLA guidance and sick-day rules.

Working together, the health coach and nurse practitioner help to guide patients and encourage positive lifestyle changes that will help improve control of their diabetes and their overall health.

Consultations are documented directly in the patient's GP records, and medication changes or urgent communications are made directly, on the same day, to the relevant team within the practice, providing seamless coordination of care between the programme and the patient's GP surgery.

Group prehabilitation sessions are available to patients up to three times per week at various locations on the Wirral. They take the form of exercise classes supported by the health coach. Class sizes are small enough for each attendee to receive significant individual input from the health coach, and exercises can be tailored to their specific needs and abilities. Small group work provides an environment in which patients can enjoy camaraderie and support one another, helping to promote the social benefits of exercise.

Follow-up arrangements

After 12 weeks, patients are followed-up at review appointments with the health coach and nurse practitioner, where weight, BMI and HbA_{1c} are measured. Progress within group prehabilitation sessions is reviewed by the health coach, along with personal achievements, queries or concerns with their journey so far. They are given advice about safe exercise following surgery, and are signposted to local services for ongoing support once they complete the programme. Patients can continue to attend the group sessions until the date of their surgery, if they wish.

The nurse practitioner reviews the patient's diabetes management, reiterating advice given at their initial appointment, if needed, and agreeing further diet, lifestyle and/or medication changes, if required. Patients are discharged from further reviews with the nurse practitioner once their HbA_{1c} has reached ≤58 mmol/mol. There is flexibility in this if the patient requires it, and patients can be referred back by the health coach, if there are ongoing or new concerns.

Evaluation

After running for nine months, the preliminary results from the programme have recorded a mean reduction in HbA_{1c} from 73.4 to 62.3 mmol/mol, and in weight from 98.41 to 95.45 kg after 12 weeks. 58 patients have been reviewed for medicine optimisation and compliance, with 37 requiring an additional medication (such as an SGLT2 inhibitor, metformin or gliclazide), 19 needing support with insulin and six being initiated on intermittently scanned (flash) continuous glucose monitoring.

Patients have enjoyed the personalised approach and continuity of care, have reported a better understanding of their diabetes and have begun to feel motivated by undertaking exercise. These early outcomes and the positive patient feedback suggest that this is an effective approach for improving pre-operative health.

Ongoing work

The programme is currently in negotiation for funding to extend the pilot beyond the initial 12-month period. It is hoped that this will allow data to be collected not only on improvements in physical metrics, but also on surgical waits, inpatient stays and complication rates in participating patients. If these expected benefits are realised, the ultimate

goal for this project is for full commissioning across the Wirral as "standard practice" for pre-operative patients with high HbA_{1c} or BMI, and potentially to serve as a model for other regions. ■

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